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Turksema, Rudolf Willem

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Document Version
Publisher's PDF, also known as Version of record

Publication date:
2000

Link to publication in University of Groningen/UMCG research database

Citation for published version (APA):
Turksema, R. W. (2000). *The supply of day care: Het aanbod van kinderopvang*. University of Utrecht.

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The Supply of Day Care

The supply of day care

Het aanbod van kinderopvang
(met een samenvatting in het Nederlands)

Proefschrift

ter verkrijging van de graad van doctor
aan de Universiteit Utrecht op gezag van
de Rector Magnificus, Prof. dr. H.O. Voorma,
ingevolge het besluit van het College voor Promoties
in het openbaar te verdedigen op
woensdag 17 mei 2000
des ochtends te 10.30 uur.

door

Rudolf Willem Turksema

Geboren op 16 december 1970 te Groningen

Promotoren:	Prof.dr. J.J. Siegers (EI/CIAV, Universiteit Utrecht) Prof.dr. S.M. Lindenberg (Faculteit der PPSW, Rijksuniversiteit Groningen)
Co-promotor:	Dr. IJ.H. van Emmerik (FSW, Universiteit Utrecht)

ISBN 90-393-2413-1

Contents

Chapter 1

Introduction

1.1 Child care, female employment, and fertility

In the Netherlands, the use of institutionalized child care has increased considerably in recent years. In the first half of this decade, there has been a rapid increase in the number of children taken into care by Dutch day-care centers.[1] Between 1989 and 1996, the period for which the most recent data are available, the percentage of children under four years of age in day-care centers has increased from 4 to almost 13%. The percentage of Dutch women using day-care centers increased from 10.3 to 14.8% between 1991 and 1995 (Groot & Maassen van den Brink, 1998).

There are several reasons why day-care center use has increased (also see Bronneman-Helmers, 1986). First, there is an increase in the demand for child care. This increase in demand is caused by major social and demographic changes since the 1970s including the increased labor force participation of women (see Blau & Robins, 1991a; Hofferth, 1996; Rosen, 1996) and the increased market value of women (Waldfogel, 1998). In the Netherlands, like many other western countries, female labor force participation increased steadily. The net[2] participation rate of women increased from 37 in 1989 to 47 in 1997 (Ministerie van SZW & Statistics Netherlands, 1997; Statistics Netherlands, 1999d). The rate of increase has been greatest among women with pre-school children (0-5 years old) and women working part-time. The percentage of working mothers of pre-school

[1] Full-time, part-time and company day care.

[2] All people between the ages of 15 and 64 who have a paid job a3q4nd work at least 12 hours per week.

children increased from 24 in 1989 to 45 in 1997 (Statistics Netherlands, 1999d). The market value of women increased because their human capital had risen as a result of increased investments in education and a decrease in the amount of time spent outside the labor market (Blau, F., 1998).

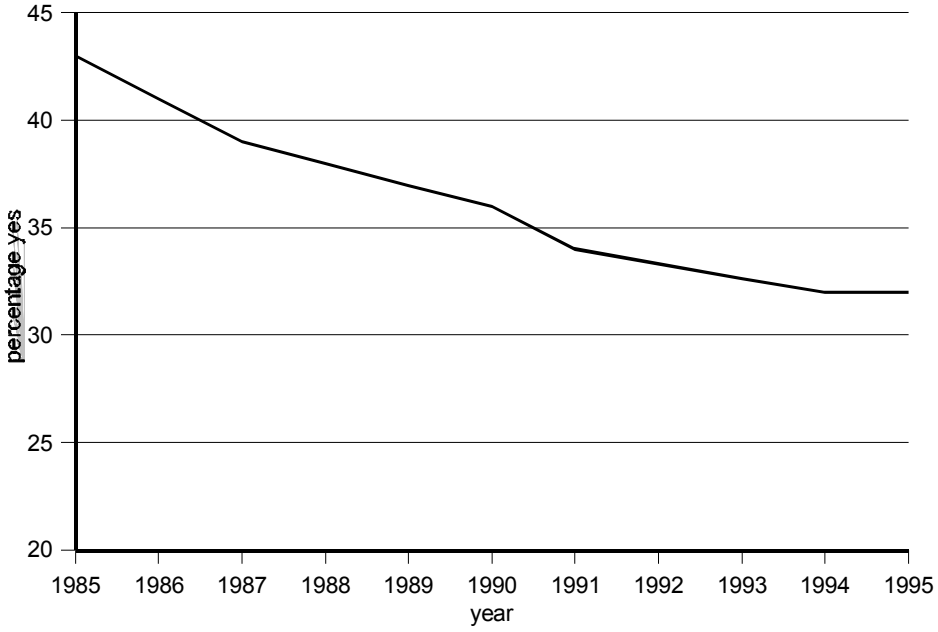
There has been a particular increase in the demand for day-care centers. They are much preferred by employed parents or parents intending to go back to work (see, for example, Hofferth, 1996). Institutionalized child care is often put forward as a solution for parents who wish to combine parenting and work (Bernhardt, 1993; Bloom & Steen, 1996).[3] Many working parents, especially the more highly educated, call in day-care centers to take care of their children while they are at work (Groot & Maassen van den Brink, 1996a; Lehrer & Kawasaki, 1985; Leibowitz et al., 1988; Ministerie van VWS, 1997; Veum & Gleason, 1991).[4] Working parents prefer formal child-care to informal arrangements, because formal child care is considered to be more reliable, more available, and of better quality than informal child care (Emancipatieraad, 1997).

Secondly, the increased use of day care can be explained by changing attitudes towards the use of day care. Attitudes, or norms, affect the use of day-care services (Van Dijk & Siegers, 1998). The notion that a woman is only a good mother when she herself takes care of her child, and that day-care centers are bad for the child, is still persistent among many Dutch people (Emancipatieraad, 1997, p.8). However, the number of people who think this way is growing smaller. Figure 1.1 shows that the use of day-care centers is gradually becoming more accepted. Between 1989 and 1995, the percentage of people disapproving of day-care center use decreased from 43 to 32 percent.

A third explanation for the increased use of day care is that there are fewer relatives available to take care of children (Groot & Maassen van den Brink, 1998; Van Doorne-Huiskes et al., 1996). The supply of informal child care has probably decreased. Increased geographic mobility has made it less likely that parents with young children have family members living nearby. This is especially true for more highly educated parents who live farther away from their relatives. In addition, elderly and female relatives now tend to participate more fully in the work process (Wash & Brand, 1990). As such, they are not available to perform the role of child minder.

[3] An alternative or supplemental arrangement is maternal or parental leave.

[4] The choice of type of child-care arrangements is affected by factors such as: child's age, mother's marital status, the number of children, the net income of the child's family, mother's educational attainment, and the number of paid hours mothers work per week (Lehrer & Kawasaki, 1985; SER, 1998; Van Dijk, 1994; Van Dijk & Remery, 1997; Veum & Gleason, 1991), but also by intrinsic and extrinsic characteristics of care (Johansen, Leibowitz & Waite, 1996). Intrinsic characteristics refer to educational or developmental attributes, whereas extrinsic characteristics refer to convenience and cost.



Source: SCP (1997, p.354).
[1]: The question was: There are parents who use a day-care center to take care of their children under the age of four for one or several days a week, what do you think of that? (*Er zijn ouders die voor kinderen jonger dan vier jaar gedurende een of meer dagen per week gebruikmaken van een voorziening voor kinderopvang, wat vindt u daar van?)*

FIGURE 1.1. CHANGES IN NORMS WITH RESPECT TO THE USE OF DAY-CARE CENTERS (PERCENTAGE OF THE DUTCH POPULATION THAT DISAPPROVES OF THE USE OF DAY CARE, 1985-1995.[1]

A fourth explanation can be found in the increased supply of day care. An increase in the use of day care can of course only be realized if sufficient places are available in day-care centers. Changes in day-care supply, however, has not met with changes in demand as the waiting lists in the Dutch child-care sector demonstrate.[5] The supply of day-care places in the Netherlands has been among the lowest in Europe for a long time (European Commission Network on Childcare, 1996; Gornick et al., 1996; Van Dijk & Van der Lippe, 1998).

Before going into the issue of the supply of child care in more detail, an overview will be given of research into the effect of the amount of day care available on female employment and fertility (Section 1.2). Developments in female employment, fertility, and child care are strongly interrelated and difficult to disentangle (see, for example, Blau & Robins, 1991a). On the one hand, an increase in female labor force participation leads to a decrease in the fertility rate (see, for example, Bernhardt, 1993) and an increased demand for formal child care (see, for example, Hofferth, 1996). On the other hand, if there are not sufficient child-care places or if child care is too expensive, women will be

[5] According to research by the Ministry of SZW (1997) there was a direct shortage of 70,000 places in 1996. An indirect shortage of another

unable to enter the labor force and not be able to combine parenting with work. This will lead either to lower labor force participation rates or lower fertility rates

1.2 The effect of child care on female employment and fertility

Studies into the effect of child care on female labor force participation and fertility are of two kinds. First, there have been studies into the effect of the availability of child care on female labor force participation, and second there have been studies into the effect of the cost of child care on female labor force participation and fertility (see Maassen van den Brink & Groot, 1995). These studies will be discussed later. In addition to availability and cost of child care, we can expect an indirect effect relating the quality of day care to female employment. If day-care quality is low, parents will be more reluctant to take their children to day-care facilities (Hofferth & Wissoker, 1992; Johansen, Leibowitz & Waite, 1996; Van Dijk, 1994). Less day care will be used, and this in turn will have a negative effect on female labor force participation.

1.2.1 Child care and female employment

Research into female labor force participation shows that the participation of women in the labor market is affected not only by their education and the presence of children but also by the availability of child care (see, for example, Cattan, 1991; Gustafsson & Stafford, 1992; Leibowitz et al., 1988; Maassen van den Brink & Groot, 1995; Van Dijk & Siegers, 1996b). The studies by Gustafsson and Stafford and by Van Dijk and Siegers (1996b) show that female labor force participation is higher when the supply of day-care places is higher. The effect of child-care costs on female employment and fertility behavior have often been studied (see, for example, Berger & Black, 1992; Blau & Robins, 1988, 1989, 1991a; Blau & Hagy, 1996; Connely, 1991, 1992; Heckman, 1974; Hotz & Kilburn, 1995; Maume, 1991). These studies have confirmed that the costs of child care are inversely related to the employment of married mothers and the subsequent demand for child care. Blau and Robins (1988) estimated the average elasticity in the probability of labor force participation with respect to the weekly cost of child care to be -0.38. A 10% increase in the weekly cost of child care results in a 3.8% reduction in the probability of labor force participation. The magnitude of this effect varies across studies: a 10% reduction in the price of child care increases the probability that a married mother will work by between 2% and 8% (Council of Economic Advisers, 1997).

It should be noted that if women have a job, these jobs are often of low status in terms of economic independence (Maassen van den Brink & Groot, 1995) and career opportunities. Most working women work part-time (Van Doorne-Huiskes et al., 1996). The percentage of women who work part-time in the Netherlands is the highest in Europe (Ministerie van SZW & Statistics Netherlands, 1997). In 1997, 67% of Dutch women worked part-time (Statistics Netherlands, 1999d). Working part-time is a very common strategy for women with young children who want to combine paid work with unpaid care (Bouwens, 1996; European Commission Network on Childcare, 1992a; Ministerie van

160,000 places follows from the fact that women indicate that they would work if adequate child care would be available.

SZW & Statistics Netherlands, 1997; Nyfer, 1999). In 1994, a comparison between cohabiting women with a child under five years and cohabiting women without children showed that 6% of the former were in employment in contrast to 28% of the latter (Emancipatieraad, 1997). One consequence of the high degree of part-time work is that the increase in female labor force participation, calculated in terms of the number of working years (labor force participation calculated in full-time equivalents), is much lower than the increase in the number of working women. Between 1989 and 1997 the degree of employment[6] measured in terms of the number of persons employed increased from 42% to 55% while the degree of employment in terms of the number working years increased from 28% to 35% (Ministerie van SZW & Statistics Netherlands, 1997; Statistics Netherlands, 1999d). The high degree of part-time work also implies that most women are not economically independent, have almost no career possibilities,[7] and that the activities in which they are involved are of a lower quality (see, for example, Bouwens, 1996; Waldfogel, 1997; 1998).

1.2.2 Child care and fertility

There was a considerable increase in female labor-force participation between 1975 and 1988.[8] However, during the same period, there was a decrease in the total fertility rate[9] which dropped from 1.66 in 1975 to 1.54 in 1988 (Statistics Netherlands, 1999b). By contrast, the fertility rate decrease between 1989-1996 was much smaller than the decrease that that occurred between 1975-1988 (from about 1.55 in 1989 to 1.53 in 1996) (Statistics Netherlands, 1999d). This phenomenon, an increase in female labor force participation coupled with a decline in fertility, has been observed in many countries (Bernhardt, 1993; Rosen, 1996). Having a paid job leads to women having a lower average number of children and the birth of the first child being delayed (see, for example, Bernhardt, 1993). Potential parents postpone the birth of their first child because they expect problems with coordinating the care of their children with the demands of their work (Beets, 1999; Ministerie van SZW & CBS, 1997; Van der Hoeven et al., 1988).[10] As a result, Dutch women are much older than their European contemporaries when they have their first child (Beets, 1999).[11] This is especially true for the more highly educated women, whose opportunity costs in terms of foregone wages are higher than those of women with less education (Mertens, 1998). A delayed birth involves health risks for mother as well as child, and also leads to higher costs in the health-care sector (Mertens, 1998). Postponement of motherhood leads to higher wages, but is at odds with the biological advisability of having children when one is still young (35 years).[12] For many women,

[6] Percentage of the population that actually has a paid job.

[7] Anticipation of problems associated with having a child (being too late, absenteeism) may \prevent a woman from accepting a career-oriented job and lead her to search for a job in which there is more tolerance towards tardiness and absenteeism, even though they are low paying and offer little chance for promotion" (i.e. secondary sector jobs) (Veum & Gleason, 1991).

[8] Female labor force participation increased from 25 percent in 1975 to 36 percent in 1988 (Ministerie van SZW & Statistics Netherlands, 1997).

[9] Total fertility rate: number of births that 1,000 women would have had in their lifetime if, at each year of age, they experienced the birth rates occurring in the specified year.

[10] Creating more child-care facilities can also have a negative effect on fertility. Mothers may have appreciated working that much, that they do not want any more children.

[11] Beets (1999) evens calls the Netherlands “world champion late parenthood".

[12] Consequences of postponement (Bouwens, 1996): fertility problems resulting in an increase of the number of fertility improving treatments, a higher chance of complications during the pregnancy, an increase in demand for prenatal diagnoses, a higher chance of

however, the birth of a child is a reason for stopping paid work or reducing the number of hours worked (Bouwens, 1996; Groot & Maassen van den Brink, 1997). In 1996, 73% of mothers stopped working or reduced the number of hours they work after their first child was born (Statistics Netherlands, 1999d).

The effect of child-care costs on fertility has been studied less often than the effect of child-care costs on female employment. Exceptions are two studies by Blau and Robins (1989 & 1991a). In their 1989 study they estimated that a one dollar increase in child-care costs per hour would decrease the birth rate by about 2%.[13]

1.3 Supply of child care in the Netherlands

Section 1.2 showed that day-care supply (in terms of availability and costs) affects female labor force participation and fertility. Day care is an important instrument in many western countries where policies have been designed to allow parenthood and work to be combined. It is therefore important and interesting to take a closer look at the supply of day care in the Netherlands, and at the policy that has been designed for it. In this section we will examine the extent to which the Dutch day-care industry has changed in recent years. We will also deal with government policy in respect of child care and the way in which this affects day-care supply.

1.3.1 Structure of the child-care industry

This study focuses on institutionalized day care for children under four years of age.[14] Institutionalized day care includes both subsidized day-care centers and non-subsidized day-care centers (Van Dijk, 1994).[15] Playgroups are not included here. These offer a maximum of six hours care a week and therefore not very suitable for parents with a job. In contrast, day-care centers are open for at least eight hours per day, usually five days per week. The institutionalized child-care market is a mixed market, in which subsidized (nonprofit) and non-subsidized day-care centers (for-profit) coexist. This coexistence is possible because of product differentiation. For example, the nonprofit sector may specialize in expensive, high-quality services while the for-profit sector provides lower-quality, less expensive outputs (Rose-Ackerman, 1986, p.6).

In addition to institutionalized child care, there is also non-institutionalized formal and informal care as well as parental care. In the formal care sector, family day care in the form of guest parents is one

breast cancer when one gets older, still-birth and infant mortality, a higher chance of spontaneous twin pregnancy and a higher chance of chromosomal aberration (mainly Down's syndrome).

[13] In their 1991 study, in which fertility, employment, and child-care decisions are analyzed jointly, they also find a negative effect of child-care costs on fertility. However, no effect is found of child-care costs on female employment and the use of nonrelative care. These latter findings are in contrast with earlier results of their own and other research, but are attributed by the authors to differences in definitions and different sets of explanatory variables (Blau & Robins, 1991a, p.340). So, the question of how child-care costs affect female employment is still open.

[14] The compulsory school age is five years in the Netherlands.

[15] Previously, also company day-care centers were distinguished, but they constitute a very small part of the total day-care supply. So, for ease of interpretation they are left out here.

alternative to institutionalized care. Guest parents care for other people's children in their own home and receive a payment for doing so (European Commission Network on Childcare, 1992b). In the Netherlands, guest parents are appointed via an official guest parent office, although they are not on the payroll of that office (Statistics Netherlands, 1994b). Informal child-care supply consists of family members who live with the mother or in the vicinity and who can substitute for the mother while she is at work, and non-relatives such as baby-sitters. And of course, parents themselves are suppliers of child care. In the Netherlands, parents (mothers) are still their children's primary care takers (De Jong & De Olde, 1994; Groot & Maassen van den Brink, 1992; Van der Lippe, 1993; Van Dijk, 1994). Father's participation in child children is growing slowly, but is still very limited

1.3.2 19th century-1989

The first forms of institutionalized child care appeared in the Netherlands in the second half of the nineteenth century (Van Rijswijk-Clerkx, 1981; Pelzer & Pot, 1992). Day-care centers, then called *bewaarscholen* (nursery schools), were particularly intended for those children whose mothers were unable to take care of them themselves because they had to go out to work. These centers were set up by associations and funded by contributions from their members and the parents, legacies and donations. Funding, however, was insufficient to cover the expenses, and municipal subsidies were also necessary. In 1940, these subsidies accounted for fifty percent of revenues (Van Dalen, 1995). Shortages in labor supply in the second half of the 1960s increased demand for child care. Companies began to set up their own day-care centers. Most of these closed, however, when labor shortage was no longer an issue (Pelzer & Pot, 1992). It was not until the mid-seventies that the national government really got involved in supplying day care and a separate subsidy - the National Funding Arrangement for Day-Care Centers (*Rijksbijdrageregeling Kinderopvang*) - was introduced for day-care centers in 1977. The mid-1980s heralded in a new era, with policies that aimed to linking day care to female labor force participation. On 1 January 1987, the Welfare Law (*Welzijnswet*) was introduced and the National Funding Arrangement for Day-Care Centers was terminated. Under this legislation municipalities became fully responsible for day care (Zwier, 1989). Next to the supply-side subsidies as a part of the National Funding Arrangement for Day-Care Centers, the period 1985 to 1990 was characterized by demand-side subsidies.[16] However, these fiscal facilities did not appear to have any effect on the use of child care because there were not enough places in day-care centers for the children of parents who wanted to make use of these fiscal arrangements (Tweede Kamer, 1991b; Ministerie van WVC, 1993). They were repealed and replaced by the Stimulative Measures on child care.

[16] The so-called supplementary allowance for employers as part of the earning couple legislation (*aanvullende arbeidstoeslag in het kader van de tweeverdienerswetgeving*).

1.3.3 1990-1995

1.3.3.1 Stimulative Measures on child care

The Stimulative Measures on child care (Ministerie van WVC, 1989; 1994) were supply-side subsidies which were explicitly aimed at increasing the supply of day care. The first Stimulative Measure on child care was introduced in 1990, and covered the period 1990-1993.[17] The intermediate aim of this measure was to increase day-care supply from 20,000 to 69,000 child places[18] (Ministerie van WVC, 1989, 1991a, 1994). Municipalities received a government contribution of NLG 5300 per child place (Tweede Kamer, 1991b). Not all categories of child care were included in the Stimulative Measures. The measures were explicitly meant for full-time and part-time day-care centers, company day-care centers, guest parent offices, and school-age child care. These arrangements are aimed at parents who are either at work or in study and reinforced the final objective of the Stimulative Measure, which was to increase the labor force participation of women with young children and to facilitate their economic independence. In this way, child care in the Netherlands became a labor market instrument whereas formerly it had been an instrument in welfare policy (Commissie Kwaliteit Kinderopvang, 1994). This is in sharp contrast to the Scandinavian countries - Norway, Sweden, and Denmark - where child care is an instrument in family policy. The Stimulative Measure continued throughout 1994 and 1995 although because of cut-backs in expenditure, the subsidy per day-care place was reduced from NLG 5300 to NLG 4750. In addition, day-care centers had to ensure that their capacity was more intensively utilized, that the percentage of employer-financed places increased, and that the parental contributions were raised (Mutsaers, 1997).

Table 1.1 shows how government contributions to child care, and the subsidies per child place developed between 1990 and 1998.

TABLE 1.1 CENTRAL GOVERNMENT CONTRIBUTIONS TO CHILD CARE, 1990-1998.[a]

(mln NLG)	1990	1991	1992	1993	1994	1995	1996	1997	1998
Total subsidy (Stimulative Measure)	149	201	252	264	238	238	194[b]	194[b]	192[b]
Fiscal measures (WVA)[c]	-	-	-	-	-	-	42	>42	>42
Subsidy per child place (NLG)	5,000	5,300	5,300	5,300	4,750	4,750	[d]	[d]	[d]

[a]: 1989 not available.
[b]: Decentralized to the Municipal Fund.
[c]: Deduction of the expenses on child care employers make from the payment of income tax.
[d]: Varies per municipality.
Sources: MDW (1998), Ministerie van VWS (1997).

The total subsidy increased steadily between 1990 to 1993 from NLG 149 to NLG 264 million. The availability of additional money during this period had been agreed upon in the coalition agreement

[17] Actually, there were two Stimulative Measures in this period (1990 and 1991-1993). The differences between the two are small, and therefore it is referred to as the Stimulative Measure 1990-1993.

[18] A child place is an administrative unit and refers to 2160 hours of care per year (Tweede Kamer, 1991b).

that preceded the Lubbers' second cabinet. In 1994 and 1995 the total subsidy amounted to NLG 238 million.

In addition to increasing female labor force participation, the Stimulative Measures had two other important features. First, it increased the involvement of employers in financing day care, and second the decentralization of policy to the local government.[19] The involvement of employers in child care meant the introduction of employer-financed places. There were now two kinds of subsidized day-care center places: places for working parents whose employers were willing to finance day-care places for them (employer-financed places) and places that were in principle accessible to all other parents (subsidized places).[20] A third possibility was that parents financed the place themselves. Such private places are found primarily in non-subsidized day-care centers. All three categories of places - subsidized, employer-financed, and private - can be found in subsidized as well as non-subsidized day-care centers, but in different ratios.

We will now examine the roles of the three parties involved in the child care sector - employers, government, and parents - and discuss the advantages and disadvantages of the involvement of employers in the child-care sector. We will also go into the effect of decentralizing policy to local government. Finally, we will evaluate the role of parents.

1.3.3.2 Involvement of employers via a public-private partnership

Employers were given an important role in the Stimulative Measures, via employer-financed places in subsidized day-care centers. Employers hire or buy places for their employees allowing their employees to combine work and parenthood. For every full-time child place employers received a (minimum) premium or discount of NLG 2000. The involvement of employers is unique. No other country has a tripartite financing system for the child-care sector, where government, parents, and employers jointly fund the expenses involved in child care. The cooperation between government and employers can be characterized as a public-private partnership (Maassen van den Brink, 1995b). For the Dutch government this means that for every guilder it spends it gets about twice as many day-care places. In this way, the Dutch government was not only able to achieve its social goals, but was able to deal with its budget deficits at the same time. Employers agreed to this partnership, as they too profited from the increased (female) labor supply that was needed to meet the growing demand for labor. Child care also enabled employers to keep female workers with high skills developed through their firms investments in on the job training (Maassen van den Brink, 1995b; Ministerie van SZW, 1997). It also helped counter the problems of absenteeism, lack of punctuality, low moral and low productivity which can arise when employees are unable to arrange care for their children (Hayghe, 1988, p.38; also see Fernandez, 1986). Other benefits to employers included saving on the cost of recruiting and training new employees, a positive image, and being able to offer employees an extra fringe benefit (Ministerie van WVC, 1991b).

[19] This is a territorial decentralization, which should be contrasted to functional decentralization, `the appointment of public tasks to private or public organizations that are independent in exercising these tasks in such way that there is no hierarchical subordination to a minister or local government' (Leeuw, 1992, p.23, translation RT).

[20] It should be noted that these places are increasingly being reserved for target groups.

Leaving the choice of whether or not to offer day care to employers has disadvantages too (also see Schippers & Siegers, 1992; Siegers & Turksema, 1998). Most of these disadvantages are related to the accessibility of care. A first problem is that in sectors where employers are not as dependent on female workers, less day care will be financed for employees, and only for certain employees (cf. Hayghe, 1988; Schippers & Siegers, 1992; SER, 1998; Teulings, 1993; Van Praag & Niphuis-Nell, 1997). Employees pay their employer their contribution to the child-care costs on the basis of an income-related parental contribution table. Employees lower down in the organizational hierarchy, i.e. less well-educated employees, pay a smaller contribution than employees higher up in the organizational hierarchy. They are therefore more expensive to the employer because the firm will have to pay a larger proportion of the child-care costs of this type of employee than it has to for employees higher up the hierarchy (MDW, 1998). Hence, employers will finance day-care places to keep or recruit highly skilled female employees, but will not do so for their less skilled female employees (Schippers & Siegers, 1992). This can be an impediment to the realization of adequate child-care arrangements in companies or sectors where there are a relatively high number of low-income female employees (MDW, 1998; SER, 1998, p.101-2). It enlarges existing social inequalities, since earnings and other terms of employment are usually more favorable in primary jobs than in secondary jobs. Furthermore, it makes these companies and sectors even more attractive to female workers, which reinforces the existing segregation between men and women in the labor market instead of reducing it.

A second problem of employer-financed child care is that child care becomes part of collective labor agreements (CLAs) (see, for example, Van den Brekel, 1997). This introduces differences between those employees with a CLA and those without (Nyfer, 1999, p.16-7). Research shows that in about half of the CLAs, concrete agreements with respect to child care have been made. Most CLAs involve arrangements for renting places in a day-care center.[21] This applies to 58% of employees with a CLA that includes child care. Twenty percent of employees fall under a so-called `soft' CLA agreement and the rest can be classified under an intermediate form (SER, 1998, p.95). The extent to which these arrangements are concrete varies considerable from one sector to another. In the government, education, health care and welfare sectors, the vast majority of agreements consist of renting child-care places, whereas in other sectors allowances or a declaration of intent are more common (see Koolmees et al., 1998). So, it can be concluded that there are large differences between sector as far as access to child care is concerned (also see Nyfer, 1999). Parents who are in a collective labor agreement that does not include child care have, therefore a restricted access to a substantial part of the child-care sector.

A third problem is that in 68% of municipalities, and particularly in those with less than 50,000 inhabitants, it is a problem for day-care centers to secure employer-financed places. The main reasons for this is a lack of interest among employers and that the price of child care is too high for some of them (Ministerie van VWS, 1997). This situation is particularly common in municipalities where the demand for day care is generally low either because there are few women who are employed, jobs are concentrated in small enterprises and these are less likely to offer child-care

[21] Renting a child place means that the employer hires a number of child places at a day-care center an/or guest parent project. Buying a child place means that, irrespective of the use, a number of places is available for the employees (SER, 1998; Van den Brekel, 1997).

benefits to their employees (see Koolmees et al., 1998) or women do unskilled work and can be easily replaced (see also Nyfer, 1999, p.16-7). Employers in this type of situation see child care as being too expensive and do not consider it important to retain personnel (see also Fernandez, 1986).

A fourth problem is that employer-financed child care can be expected to reduce labor mobility. Parents might not prepared to change their job if a potential new employer does not offer child care.

Fifthly, the demand for day care by employers may be cyclically sensitive. When there is a period of economic growth and more women are needed in the work force employers will be more prepared to make more facilities available. However, when the business cycle is more depressed, these facilities can easily be withdrawn (Nyfer, 1999; Schippers & Siegers, 1992; SER, 1998; Siegers & Turksema, 1998).

1.3.3.3 Government and municipalities: decentralization

A delegation of policy implementation from central to local government is a second important feature of the Stimulative Measures.[22] This decentralization is part of a larger Government policy initiative to decentralize welfare services. Municipalities were free to decide whether or not they apply for child-care subsidies. Not all of them applied when the policy was first introduced in 1990, although there was a jump in the percentage of municipalities with a day-care center from 32% in 1989 to 50% in 1990 and to 85% in 1995 (Mutsaers, 1997).

Table 1.2 shows how municipal expenditure and revenue with respect to child care developed between 1991 and 1995. Expenditure on child care increased from NLG 216 to NLG 495 million in this period whereas revenues increased from NLG 68 to NLG 253 million. As a result, the deficit increased from NLG 148 to NLG 242 million. Municipalities had to find money from other sources to meet the expense of child care.

TABLE 1.2 MUNICIPAL EXPENDITURES, REVENUES, AND DEFICITS WITH RESPECT TO CHILD CARE, 1991-1999[A]

(mln NLG)	1991	1992	1993	1994	1995	1996	1997	1998	1999
Expenditures	216	357	454	436	495	451	451	500	538
Revenues	68	174	247	221	253	149	59	57	83
Deficits	148	183	206	215	242	302	398	442	454

[a]: 1989 and 1990 not available.
Sources: Statistics Netherlands (1992, 1993b, 1994c, 1995b, 1996, 1999d).

1.3.3.4 Parents

Day-care centers are increasingly being used by parents with higher incomes. Data from Groot and Maassen van den Brink (1998) show that in 1991 22.9% of the parents using a day-care center were in the highest income category. By 1995 this percentage had increased to 55.4. It is obvious that at

least part of this increase can be explained by the increased involvement of employers in child care. Employed parents have higher incomes than unemployed parents, and it is reasonable to assume that higher income employees in particular will use day care (see also Section 1.3.2.2). Before 1990 there was a relatively large number of children from low-income families (children from one-parent families and minority groups). Higher income parents usually used a paid child sitter (Bronneman-Helmers, 1986). The increased use of day-care centers by high income parents can perhaps be explained by a change in the composition of the population using day-care center. If this were true we would expect to see a strong increase in the number of non-subsidized centers (serving relatively more high-income parents) than in the number of subsidized centers. However, it appears that exactly the opposite is true. Between 1989 and 1995 the number of subsidized centers increased strongly (199%) whereas the number of non-subsidized centers increased by only 13% (Mutsaers, 1997).

Under the prescriptions of the Stimulative Measures parents pay an income-related parental contribution. The income-related parental contribution is intended to ensure that parents' income position does not prevent them from having their children use day-care facilities, because the price parents pay is an important determinant in deciding whether to work or not (see the literature reviewed in Section 1.2). Although the size of the parental contribution is linked to total household income, the proportion of the extra income that has to be spent on child care is an important factor as far as parents are concerned (MDW, 1998, p.18). There are also negative side-effects to income-related parental contributions (Teulings, 1993). First, they increase the marginal wedge. For every guilder extra income earned, a certain percentage disappears because the parental contribution also increases (MDW, 1998, p.34). The marginal wedge creates a poverty trap: every attempt to earn a higher net income is punished by this wedge.[23] Second, income-related parental contributions strengthen the discouraging effect of the possibility of transferring the basic tax of the partner with no income or an income lower than the basic allowance to the partner with the higher income (Grift, 1998, p.68) on labor force participation (MDW, 1998, p.24-5).[24]

1.3.3.5 Developments in day-care supply

The government's policy to stimulate the supply of day care seems to have been successful. Table 1.3 shows that between 1989 and 1995, the number of child places increased from 20,100 to 65,600, an increase of 226%. This growth occurred mainly between 1989 and 1993 (84% of the total growth between 1989 and 1995 had taken place before 1993). The table also shows that the growth rate declines steadily between 1990 and 1995. Between 1989 and 1990, the number of child places increased by 40%. Between 1991 and 1993 there is a monotonous decrease in growth rate followed

[22] In turn, local governments have mainly contracted out the actual provision of day-care services to day-care centers (nonprofit and for-profit).

[23] This problem could be reduced by income-related parental contributions which are as gradual as possible and amount to a fixed percentage of the taxable income (MDW, 1998, p.34; see also Graafland, 1999; Gustafsson, 1999: Teulings, 1993). However, this would also mean that low-income families pay a substantially higher price for child care (Graafland, 1999).

[24] Additional bottlenecks with respect to the parental contributions: labor intensive for centers, susceptible to fraud, differing between municipalities, cumulation of income effects, differences between parents using subsidized, employer-financed or private places (MDW, 1998, p.27-8).

by a considerably drop in 1994.[25] A possible explanation for the reduced growth between 1994 and 1995 may be the lowering of the subsidy per child place (Arachne, 1994, p.7).

As can be seen in Table 1.3 almost 90% of the growth that took place between 1989 and 1995 can be attributed to newly created employer-financed places within subsidized day-care centers. The percentage of employer-financed places increased from 10.9% of all child places in day-care centers in 1990 to 49.6% in 1995. On the one hand, through the increase in the number of employer-financed places more places become available as a whole. However, on the other hand this also increased differences in the accessibility of day care as employer-financed places cannot be used by everyone (Commissie Kwaliteit Kinderopvang, 1994). Parents who are not gainfully employed, parents with jobs not covered by collective agreements, single parents, parents from ethnic minorities or those with a low-income tend to be neglected and do not benefit from the supplementary funding provided by employers (European Commission Network on Childcare, 1992a). One concern has been that the emphasis on quantity in the Stimulative Measures resulted in the issue of quality not being properly addressed (Commissie Kwaliteit Kinderopvang, 1994).

TABLE 1.3 CHANGES IN THE SUPPLY OF DAY CARE, 1989-1996 (AS OF DEC. 31)

	1989	1990	1991	1992	1993	1994	1995	1996
Child places[a]	20,100	28,200	37,000	46,900	58,100	63,200	65,600	72,700
Percentage increase compared to past year	-	40.3	31.2	26.8	23.9	8.8	3.8	10.8
Day-care places[b]	22,100	31,200	42,000	55,200	69,400	73,500	78,100	84,900
of which full-time day-care places	14,800	21,400	28,800	34,600	41,700	45,400	48,100	54,100
of which employer-financed	-	-	7,200	12,400	15,200	19,700	23,600	25,500
Percentage employer-financed[c]	13	11	28	38	38	44	50	53
Number of full-time centers	519	723	1,005	1,155	1,340	1,368	1,417	1,587

[a]: Child places: conversion of child-care arrangements mentioned in footnote a into a comparable measure: 1 child place = 1 place in a full-time day care center or in a company day-care center = 1.5 places in school-age child care or in a part-time day-care center = 2.5 guest parent couplings (see Statistics Netherlands (1995a, p.28) for details).
[b]: Places in full-time and part-time day-care centers, company day-care centers, guest parent office, school-age child care ('buitenschoolse opvang').
[c]: Number of employer-financed places in full-time day-care center plus the number of places in company day-care centers divided by all day-care places in full-time centers, part-time centers and company day-care centers.
Source: Statistics Netherlands (1999, p.7).

We can conclude that under the Stimulative Measures on child care, the supply of child care services has increased considerably. Part of the increase can be explained by the way the Stimulative Measures were set up, namely in the form of a public-private partnership between government and employers. The level of day care supplied in the Netherlands is not only a reflection of parental demand for day care but is also closely related to the efforts of both employers (buyers of employer-financed places) and municipal councils (buyers of subsidized places and subsidizers of day-care centers).

[25] This is surprising, given the fact that in 1994 and 1995 demand for day care was still not met. For 1995 the waiting list was estimated at about 32,000 full-time places (Ministerie van VWS, 1997).

1.3.4 1996-1998

1.3.4.1 Further decentralization

On January 1, 1996 the Stimulative Measures on Child Care ceased to operate. The Government's tasks and responsibilities were entirely decentralized and taken over by the municipalities. The municipalities, who were already responsible for administrative matters, now became responsible for financial matters as well. This decentralization was combined with measures designed to secure economies. The total government subsidy budget of NLG 238 million was cut by NLG 44 million in 1996, and further decreased to NLG 192 million in 1998 (see Table 1.1). The larger part of this NLG 44 million is, however, used to stimulate employers to buy child care for their employees. Employers can deduct the expenses they make on child care from income tax. A salient detail is that the day-care subsidies, now in the Municipal Fund (*Gemeentefonds*) were no longer earmarked as being specifically for day care. Municipalities could now determine for themselves how much they wanted to contribute per child place. This contribution will depend on the one hand on the amount they receive via the Municipal Fund, and on the other on the extra requirements the municipal council has for day-care centers (Commissie Kwaliteit Kinderopvang, 1994, p.25). Table 1.2 shows that between 1996 and 1999, the expenses incurred by municipalities in relation to child care increased and were not compensated by any increases in revenues. As a result the deficit also increased. Municipalities can, in addition to (or instead of) subsidizing day-care organizations, also contract day-care organizations to perform certain semi-public services via private agreements. Municipalities can now hire places in a day-care center for target groups. An example of such a target group is the single parent. In 1996, a special regulation for child care and school-age child care for single parents in the Social Security Act (*Algemene Bijstandswet*, ABW) was established (see Van den Akker & Henkens, 1998). The role of the central government was restricted to setting up temporary regulations for minimum quality standards, and for supplying fiscal arrangements for employers and parents.

1.3.4.2 Transition from welfare to market

The falling away of the Stimulative Measures on Child Care reflects the transition from the welfare to the market sector. This is in line with Dutch government policy in recent years that has been characterized by a withdrawal of the collective in favor of the market sector. Privatization, the rapid growth in the number of quangos[26] and the project called *Marktwerking, deregulering en wetgevings-kwaliteit*" (`The market, deregulation, and quality of legislation') on the part of the Ministries of Economic Affairs and Justice bear witness to these developments. Reasons for this move towards commercialization include increased (allocative, technical, and dynamic) efficiency, a reduction of the government sector (including a reduction of the government budget deficit), and the long-term

[26] Quangos are organizations that carry out a public task, are financed by the government, but do not have a direct hierarchical relation with a department or minister (see Van Thiel, Leeuw & Flap, 1998).

continuity of the organization (Loeff Claeys Verbeke, 1994, pp.19-20).[27] The commercialization of such fields as the public utility sector has led to \increased productivity, lower levels of inflation, more product differentiation, more (technological) innovations, and in the long term higher output and employment" (Van Hulst, 1996, p.317, translation RT). However, increased competition has not led to positive developments in every sector. Liberalization of the rented housing market has not led to lower rents. Instead, prices have increased substantially (Van Schaaijk, 1996, p.640). Commercialization has also been introduced in the health care and service sector. In these sectors, an increasing demand for care and welfare services combined with limited financial resources has made it necessary to devote more attention to efficiency (Van der Meijden & Kornalijnslijper, 1994, p.1). The health care sector has been confronted with budget cuts and growing demands for some time, and an increased emphasis on efficiency has raised questions about the consequences for the quality and accessibility of care (Staatscourant, October 22, 1996).

`More market, less government' does not seem to have the same results everywhere. The question is whether the market should be introduced everywhere?. Van der Ploeg (1996, p.652), for example, noted that \more competition cannot take place with same degree of intensity in all fields" (translation RT). According to Van der Ploeg, more competition in social security for example would lead to risk selection, so that people `with a spot would not be insured or only at prohibitive premiums. He went on to observe that competition might endanger the access of people with low incomes to essential services. In some sectors when commercialization is introduced, equity is often traded off for efficiency. Within the health care and the welfare sector, where complex personal services (Hansmann, 1986) are supplied, quality also plays an important role. In the market for goods or services where quality is a prominent dimension, the increased focus on efficiency may not only affect equity, but also quality. For example, in the United States it was found that in the child-care sector the shift towards privatization was accompanied by a reduction in child care standards, monitoring, and enforcement (Meyers, 1990, p.567). In Australia too the market was used to increase day-care supply. This resulted in an increase in the number of places (especially private places), more differentiation, higher efficiency, and lower prices. However, an unequal distribution of places resulted. There was a surplus of places in densely populated areas and a shortage in distant areas (Godfried, 1998).

The transition from welfare to market may not be easy for day care centers. Like many other nonprofit organizations, most day-care centers depend heavily on government subsidies and have attuned their service provision to the wishes of the politicians in power. The transition might cause problems as, Le Grand and Bartlett (1993, p.14) argue, \many people working in welfare services are not commercially or financially motivated, and find it difficult to make the shift from considering the welfare of their users to the financial state of their provider unit". Another problem is the small size of the centers that stands in the way of a more professional, market-orientated approach (MDW, 1998, p.29). Also, under the Stimulative Measures on child care insufficient attention was paid to creating proper conditions for ensuring that, in the economic sense, the enduring upkeep of these newly created places could be guaranteed (Moret Ernst & Young, 1995, pp.11-12).

[27] In the cases of privatization by the Dutch government that were investigated in the study of Loeff Claeys Verbeke, allocative efficiency was not very important. Derived motives like cutting down expenses, sizing down the number of civil servants, and the survival of a service unit are more important (Loeff Claeys Verbeke, 1994, p.21).

Moreover, the ending of the Stimulative Measure and the subsequent transition from the welfare sector to the market sector has led to changes in the roles of employers and municipalities. To survive, more attention must be paid to the wishes of employers and less to the wishes of municipalities. Day-care centers are no longer certain of a fixed budget. They now must contract employers and municipalities to hire day-care places. No longer are they certain of the municipality subsidizing them (no earmark on day-care subsidies) and no longer are they a welfare provision that is theoretically able to serve every parent. They have become social entrepreneurs contracting for money. The day-care centers are \torn between organizational maintenance and pursuit of their purposive objectives" (Smith & Lipsky, 1993, p.149). We are interested in how these changes affect the supply of day care. The outcome of this process provides an answer to the question of how far day care is a service that can be left to `the market'.

Research questions

We have seen that the supply of day care is important to female labor force participation and fertility. We have also reviewed the policy towards day care, and looked more closely at recent developments in the supply of day care in the Netherlands. Most studies on day care have either focused on the use of day care or on the demand for it (for example Van Dijk, 1994). Little is known about day-care supply and the factors that affect it. There have been some studies on day-care supply in the United States (for example the Cost, Quality, and Child-Outcomes study) and Sweden (Bjurek et al., 1992), but there has been hardly any scientific research into day-care supply in the Netherlands. In this study we will examine how government policy in recent years has affected day-care supply. First, we will look at the way the Stimulative Measures on child care have affected day-care supply (also see Section 1.3.3). More specifically, we will investigate how day-care supply can be explained by demand for day care by parents, government, and employers, and how, over time, the Stimulative Measures changed the relative influence parents, government, and employers had on day-care supply. It can be expected that Stimulative Measures (decentralization of policy and a public-private partnership of government and employers) might have made day-care supply more dependent on municipal politics and the municipality's employment structure. Therefore, the first research question is:

1a. How can the aggregate day-care supply in municipalities be explained by the demand for day care by parents, Town Councils, and employers?
1b. How does the relative influence of demand for day care by parents, Town Councils, and employers on the aggregate day-care supply in municipalities change over time?

Second, in the second half of the 1990s the government withdrew from the day-care sector, marking the transition of the day-care sector from welfare to market (see Section 1.3.4). Therefore the second research question is:

How does the transition from welfare to market affect differences in efficiency, quality, and accessibility of supply among day-care centers?

To be able to answer these questions we will need to gain insight in how day-care supply can be explained. Day-care supply is assumed to be the result of choices that are made by day-care center decision-makers. In their decision-making they are confronted with restrictions, and these restrictions force them to make choices. This issue will be discussed further in Chapter 3.

The two research questions will be addressed in two separate studies (although not in separate chapters). The first study tries to explain day-care supply in municipalities and changes in the effects of the determinants of this supply over time. It addresses Research Question 1. Research Question 2 is addressed by the second study, which tries to analyze how the transition from welfare to market affects differences in supply among day-care centers.

1.4 Content of book

In this dissertation we try to explain the supply of day care. Moreover we analyze how (Dutch) government intervention affects day care supply, in terms of quantity, quality and its accessibility. Chapter 2 describes the special characteristics of the child-care market. What is it that distinguishes the child-care market from other markets and why is it worthwhile to analyze how it functions? Chapter 3 introduces a theoretical framework to explain day-care supply and to analyze the consequences of government intervention in the day-care sector. In this chapter, a theoretical model is built to analyze how the Stimulative Measures and increased commercialization affect day-care supply. Chapter 4 describes the data, operationalizations and statistical methods we use in this study. Chapter 5 provides the descriptive analyses. In Chapter 6 the results of the tests of the hypotheses derived in Chapter 3 will be presented. Finally, Chapter 7 contains the summary, and conclusions.

Chapter 2

The child-care market[28]

2.1 Introduction

What is it that distinguishes the child-care market from other markets and that makes it worthwhile analyzing the way it functions? The child-care market is a market where multidimensional and differentiated sets of services are traded and where the local market consists of heterogeneous providers (Helburn et al., 1995; Walker, 1991). These and other idiosyncratic features of the child-care market cause market imperfections. Market imperfections lead to an under-supply of good-quality child-care services, and may be a reason for governments to intervene in the market. However, government intervention is not perfect either, i.e. there may also be government imperfections. It will therefore continue to be necessary to check and see what constitutes an optimal combination of market mechanisms and government intervention.

Why should the government intervene in the child-care market rather than consider child care to be a private good? In principle, there are two criteria for a government to intervene in a market: efficiency and equity. Markets are (allocatively) efficient, when \prices and produced quantities are in agreement with the consumer's wishes and that goods and services turn up where they are supposed

[28] Parts of this chapter were published in Siegers and Turksema (1996) and Turksema, Siegers, and Van Emmerik (1998).

to, in conformity with demand and supply" (Bos, 1995, p.44 (translation, RT)).[29] Ultimately this maximizes consumer welfare: no individual can be made better off without another individual becoming worse off.[30] If markets are not fully efficient, i.e. there are market imperfections, consumer welfare will not be maximized. Efficiency is important because inefficiency costs means that could be utilized for the production of more of the same goods or services or of other goods and services. The equity criterion generally pertains to whether low income groups are also able to purchase the goods and services that are produced (like housing, education and so forth). In the case of the child-care market, equity generally pertains to two things: accessibility and an equitable distribution (client mix). Unequal access to and unequal distribution of child-care services to individuals provides governments with a reason to intervene in a market. Whereas efficiency as such is an objective goal, equity is a subjective matter, which makes it difficult to evaluate without making value judgements.

This chapter focuses on the supply side of the market, as market and government imperfections generally occur on this side of the market (Blau, 1991). Section 2.2 elaborates on the sources of market imperfections. Section 2.3 describes the equity considerations in the child-care market and Section 2.4 deals with sources of government imperfections. An overview of possible types of government intervention is given in Section 2.5 and Section 2.6 evaluates several policy measures in the child-care market. We end the chapter with a summary and conclusion.

2.2 Market imperfections

There are three conditions for a market to be (allocatively) efficient. First, there is pure competition,[31] in other words the numbers of consumers and suppliers are large enough that each of them individually is too small to exert a significant influence on the price. Second, all the consumers and suppliers are completely informed, and third, there is a full set of markets, which means that there are no external effects, i.e. effects outside the market but based on market acts (cf. the absence of a market for clean air). If one or more of these conditions are not met, then we speak of market imperfection. It is also known as market failure, which erroneously suggests that every market imperfection requires government intervention.

In this section we will evaluate the extent to which the child care market meets with these three conditions (see, for example, Helburn et al., 1995; Siegers & Turksema 1996, 1998; Walker, 1991).

2.2.1 Monopoly elements

The day-care market is neither characterized by pure competition nor by monopoly. Rather, we can speak of monopolistic competition, as the supply from each provider is somewhat different (see, for

[29] Technically speaking: the marginal social returns are equal to the social costs (Bartelsman & Ten Cate, 1997).

[30] Strictly speaking: given an initial distribution of income.

[31] More conditions have to be met for competition to be perfect instead of pure. Pure competition requires (1) a large number of firms, (2) homogeneous products, and (3) free entry. Perfect competition requires conditions 1-3 as well as (4) perfect knowledge on the part of all buyers and sellers about the conditions in the market, (5) complete mobility of factors of productions between industries, and (6) no

example, Dietz, Heijman & Kroese, 1996; Hirshleifer & Glazer, 1992; Preston, 1988). These differences are related to the combination of price, convenience for parents, the certainty that the care will be guaranteed in the near future, availability, and quality (Walker, 1991). Each provider is a monopolist in terms of its own variety, but also has to deal with competition because consumers can easily turn to another variety. Thus, the higher the price in the formal sector, the more demand for child care will shift from the formal sector (day-care centers, host parent projects) to the informal sector (which ranges from care provided by parents, friends and relatives to care provided by other persons (see Chapter 1; Van Dijk, 1994). The extent to which substitution between formal and informal care, for example, is possible depends on local conditions (for example, are there places available at a day-care center?) and on specific conditions on the demand side, such as the nature and size of social networks. In itself, the monopoly element of the child-care market makes prices higher and the size of the supply smaller than would have been the case in a situation of pure competition, but these disadvantages seems to be amply compensated by the fact that the product variety largely corresponds with the need for variation on the part of child-care consumers.

It should be noted that monopolistic competition can either show more likeness to competition than to monopoly or vice versa. If there are more competition elements than monopoly elements in the child-care market, demand for day care may be rather elastic, and the center will behave more like a price-taker. In contrast, if the market has more monopoly elements than competition elements, demand may be rather inelastic. Moreover, there are also monopoly elements on the demand-side of the market (i.e. a monopsony or oligopsony). In a local market there may only be a small number of buyers - the municipality, a number of employers, and parents, for example. This may limit the day-care center in its ability to compete on price.

2.2.2 Information asymmetry

The second source of market imperfection is incomplete information.[32] First, the consumers do not know all the suppliers, so it is difficult for the consumer to identify and to select a provider (Chipty, 1995; Kagan, 1991; Kisker, 1991). Host parent bureaus do serve a useful purpose in this respect, but many of the suppliers do not wish to be publicly known as such because they work off the books. Second, inherent to the nature of the product itself, is an information problem. Child care is not a search good, i.e. it is not a good whose quality can be assessed beforehand, enabling the consumer to select the desired price and quality combination. Child care is also not an experience good, i.e. the consumer is not informed about its quality through the experience of using it (Cost, Quality & Child Outcomes Study Team, 1995; hereafter CQCO; Hofferth & Wissoker, 1992). Child-care services are purchased infrequently by parents, at least as far as child care in the formal sector is concerned (Weisbrod & Schlesinger, 1986). Child care is generally a trust good, i.e. parents simply have to trust that the supplier will provide their children with qualitatively good care (Wielers, 1991; see also

transportation costs (Stonier & Hague, 1972, p.142-145).

[32] Some indirect evidence of information imperfections is provided by Hotz and Kilburn (1995) who find that, holding the price of care constant, more stringent quality regulations are associated with an increase in the demand for non-parental care; they interpret this finding as evidence that the increased standards provide a higher degree of quality assurance and hence parents demand more non-parental care (CEA, 1997).

Kagan, 1991; Ogus, 1994; Verry, 1990). Furthermore, being able to trust in the good character of child care is particularly important not only because of the short-term consequences, but also because of the long-term consequences for children (Hofferth & Phillips, 1991). This asymmetrical information engenders a tendency towards moral hazard and adverse selection. Moral hazard means that the supplier, due to the lack of quality control, has no incentive other than a moral one to supply the quality agreed upon (Bartlett & Le Grand, 1993; Weisbrod & Schlesinger, 1986). This potentially opportunistic behavior has a downward effect on the quality supplied on the child-care market (Akerlof, 1970; Bartlett & Le Grand, 1993; Hofferth & Chaplin, 1998; James & Rose-Ackerman, 1986). Asymmetric information tends also to result in adverse selection. Because of this asymmetrical information the consumer is not willing to pay any more for child care than is warranted by the anticipated average quality of the supply on the market (Blau, 1991; CEA, 1997).[33] This may mean that only sellers of lower than average quality goods can make a profit and survive in the market (Bos, 1995; Weimer & Vining, 1992, p.74). Providers of higher than average quality care have better opportunities outside this market, and will leave the market. Therefore, moral hazard and adverse selection both tend to reduce the supply and tend to lower the quality.

2.2.3 Externalities[34]

The third source of market imperfections is market incompleteness.[35] A market is incomplete when there are effects outside the market (i.e. externalities) that are based on market acts. This also applies to the day-care market (see, for example, Rosen, 1996). First, it is impossible for parents to reserve a place at a day-care center in advance other than for a few months. So there is no trade across time periods. If parents \cannot reveal their future demand for center care, no construction of child care centers will occur. Center care will not be available and an incomplete market will result" (Walker, 1991, p.71). To the extent that this exerts a downward effect on fertility, there is a downward effect on the future demand for child care and, thus, on the supply of child care. Second, day care can produce positive externalities. Day care leads, for example, to increased female labor force participation and to economic independence for men as well as women. However, individual decision-makers are not necessarily guided by macro-goals of this kind. In their cost-benefit analysis they incorporate private benefits, but no societal benefits, although these are probably larger than the private benefits. As result it might be expected that a smaller supply of child care might be provided than would be desirable from the point of view of society as a whole.

It is clear from the above that if child care is solely left to the market

- less child care will be provided than would be desirable from a social point of view
- there will be a downward pressure on the quality of the child care.

[33] Research has shown that many parents substantially overestimate the quality of care their children are receiving (CQCO, 1995; Helburn & Howes, 1996).

[34] Externality: any valued impact (cost or benefit) resulting from any action (whether related to production or consumption) that affects someone who did not fully consent to it (Weimer & Vining, 1989, p.56). Parties involved, beyond those who demand and supply, are for example the children and future users.

[35] Complete markets exist when any individual is able to exchange any good, either directly or indirectly, with any individual (Wilson, 1987).

Therefore we can conclude that, from a purely economic viewpoint, there are good grounds for advocating government intervention in the child care market. Nevertheless, the question of whether the government should indeed intervene is a political one.

2.3 Equity

In addition to a purely economic criterion like efficiency, equity is also a relevant criterion. In the case of the day-care market, equity pertains to accessibility and an equitable distribution (client mix). Access to child-care services can be restricted because there are not sufficient day-care places available or because the price is too high (Groot & Maassen van den Brink, 1996b; Maassen van den Brink, 1995b). High child-care prices will make it more difficult for less well-educated women to make use of child care, as their (potential) wages also tend to be low (SER, 1998). In the case of employer-financed child care, it will also mean that more highly educated women are in a more favorable position than their less well-educated female colleagues because employers are more willing to arrange child care for more highly-educated women (cf. Schippers & Siegers, 1992; SER, 1998; Van Praag & Niphuis-Nell, 1997). Unequal access to child-care services or what is seen as an unequitable distribution of such services may be a reason for government to intervene in a market. If child care is left entirely to the market, the day-care centers will only be accessible to higher income groups. Here again, the question of whether government intervention is called for is a political one.

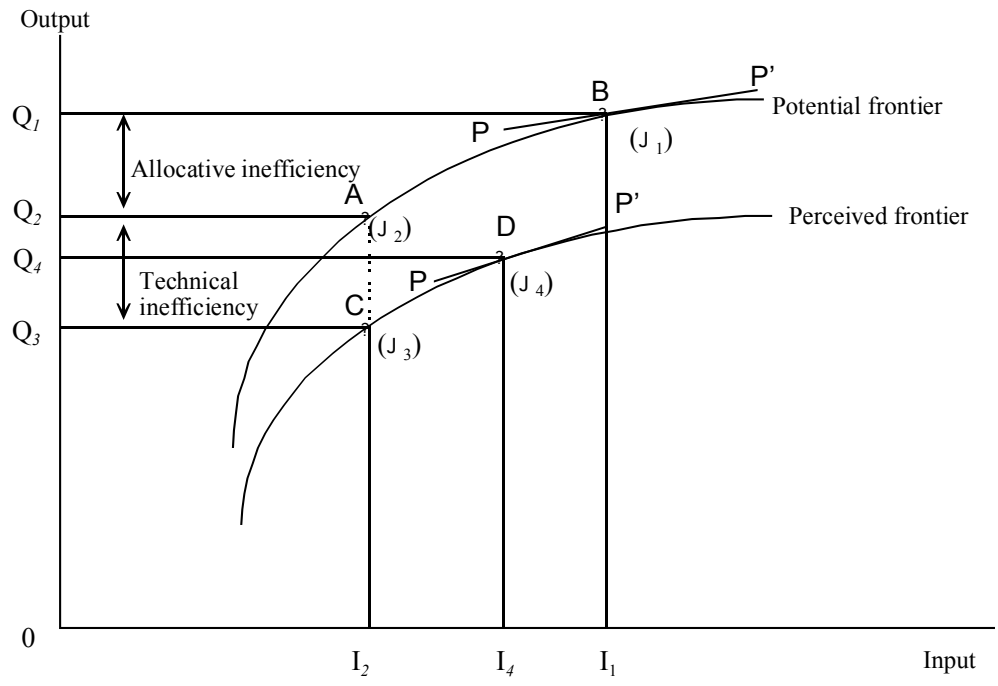
2.4 Government imperfections

Intervention by government in markets is not perfect either. In addition to market imperfections, government imperfections can also be distinguished. Government imperfections are related to the lack of one of the most attractive elements of markets: efficiency. In this case efficiency does not only refer to the (static) allocation of resources, but also to technical and dynamic efficiency.

Allocative efficiency refers to the degree to which costs are minimized and utility is maximized in transactions between production or consumption units. *Technical efficiency* refers to the degree to which the effort to produce efficiently *within* the production unit is optimal (Wolfson, 1988, p.43; also see Blank et al., 1998; Bos, 1995). It means that activities are organized in such a way that the costs of providing any given combination of quality and quantity of a service are minimized (Bartlett & Le Grand, 1993). Figure 2.1 illustrates the difference between the two kinds of efficiency in terms of frontier production functions (example taken from Kalirajan & Shand, 1999). Frontier production functions describe the production technology of a firm (the maximum amount of output that can be produced, given certain inputs).

Figure 2.1 describes two frontier production functions along which a firm can operate: a potential frontier and a perceived frontier. In the ideal situation all firms operate on the potential frontier, and inefficiencies can only be allocative. However, firms might not operate on the potential frontier but on a frontier below the potential frontier, the perceived frontier. Firms may operate on this frontier because they do not have enough knowledge to apply a new technology. Whereas firms that

operate on the potential frontier can only increase allocative efficiency, firms that operate on the perceived frontier can increase allocative and technical efficiency. For example, a firm that operates on the potential frontier is most efficient at point B, which is the point of tangency with its price line P-P'. It is at this point that the maximum profits J_1 are realized. A firm that operates at point A with profits J_2 is allocatively inefficient (the allocative inefficiency equals J_2 - J_1). In contrast, a firm that operates on the perceived frontier at point C is allocatively as well as technically less efficient. On the perceived frontier, point C is allocatively inefficient. To realize maximum profits it should operate at point D, the point of tangency with the price line of this frontier. In addition, this firm is technically inefficient, because the firm does not operate on its potential frontier. The amount of technical inefficiency is depicted by the distance between points A and C, and is equal to J_3 - J_4. The total (economic) inefficiency of a firm at point C (J_1 - J_3) thus consists of technical (J_3 - J_2) and allocative inefficiencies (J_1 - J_2).



Note: Figures in parentheses refer to net profits associated with concerned inputs and technology.
Source: Kalirajan and Shand (1999).

FIGURE 2.1 ALLOCATIVE VERSUS TECHNICAL EFFICIENCY.

Dynamic efficiency refers to the degree to which a market adapts to changing circumstances (see, for example, Bos, 1995, p.45; Vrancken & De Kemp, 1996, p.40; see also Wolfson, 1988, p.44 and 109). A problem that comes up frequently in the welfare sector, is that organizations in this sector have a strategic policy that is not orientated externally and toward the long term. Van der Meijden and Kornalijnslijper (1994) call welfare management \not innovative, not anticipative, not directed at `pioneering', but defensive, static and reactive" (p.19, translation RT). According to Van der Meijden and

Kornalijnslijper, in welfare work and care centers insufficient attention is being devoted to the exploitation of new products and markets. Commercialization may focus more attention on dynamic efficiency. In the day-care sector, dynamic efficiency manifests itself in new developments such as product innovation, in the form of flexibilization.

Here, we distinguish two sources of government imperfection, related to bureaucratic supply: the disjunction between costs and revenues and information asymmetry.

2.4.1 Disjunction between costs and revenues

A major source of government failure is the absence of the link between costs and revenues, since revenues stem from non-market sources, like government tax income or donations (De Groot & Goudriaan, 1991; Dollery & Worthington, 1996; Wolf, 1994). Managers of public organizations have a relatively large degree of discretion in deciding upon how to spend their budgets. More resources than necessary may be used to produce a certain output. Whereas market forces compel private organizations to be efficient, publicly funded organizations are not exposed to such forces, and they can survive even if they are inefficient (Weimer & Vining, 1992). Also the channeling of monies from one part of the organization to another (cross-subsidization (Van Damme et al., 1999)), which leads to inefficiencies, must be seen in this perspective. Inefficient divisions of the organization are artificially kept in business by efficient divisions.

In the market, costs and revenues are linked by prices, but no such non-market version of the price system exists. Instead, public agencies have developed their own set of standards, `internalities' in Wolf's (1994, p.68) words, that guide the behavior of people working in public agencies. Internalities in the day-care sector seem to be based on norms. Norms with respect to what constitutes good child care or which children should be served, for example, guide the behavior of the day-care center's decision-makers (more on norms in Section 3.3.3.1).

2.4.2 Information asymmetry: monitoring costs & principal-agent problem

Inefficiencies are possibly even larger when it is difficult to define and measure output. Monitoring the multidimensional and heterogeneous output of public organizations and the behavior of the managers of these organizations (agents) would be very costly.[36] Therefore, indirect measures such as, for example, structural or process variables,[37] serve as a basis for judging performance (Sherwood, 1994; Van Thiel, 2000; Weisbrod, 1988).[38] However, these measures are partially formed by the managers which gives them an informational advantage over their principals (Stein, 1990). This enables agents to pursue their own interest to some extent (Niskanen, 1971). This may mean that

[36] For parents as well as the government as the buyer of public places.

[37] Intermediate products, which serve as proxies for the intended final output.

[38] `Using a poor and incomplete measure may well be worse than not rewarding performance at all. Paying all teachers equally could be preferable to paying the \good" teachers more if our ability to identify the good teachers is sufficiently limited' (Weisbrod, 1988, p.48).

parts of the budget are used for plush offices or ostentatious buildings[39] (Weisbrod & Schlesinger, 1986). The tendency towards inefficient behavior is magnified because managers of public organizations cannot distribute possible surpluses to their shareholders (the non-distribution constraint) (Weisbrod, 1988). This implies that managers of public organizations have little to gain by producing efficiently. Rather, this would mean that next year's budget would be decreased.

Also the dynamic efficiency of public agencies will be (negatively) affected by the disjunction between costs and revenues and information asymmetry (Weimer & Vining, 1992; Weisbrod & Schlesinger, 1986, p.136). Responsiveness of (semi) public agencies to changes in market circumstances is less because they receive their revenues from taxes and donations (non-price sources).

2.5 Types of government intervention

In the previous sections, we concluded that several market and government imperfections apply to day-care markets. A number of policy solutions can be used to correct both kinds of imperfections and to address equity concerns. Each of these policies addresses different combinations of imperfections and distribution issues. In this section, we evaluate government policies used to correct the imperfections in the child-care market. There are three general ways for a government to intervene in a market: regulation, subsidization or taxation, and provision (Le Grand, 1991; see also Wash & Brand, 1990). These kinds of policies, distinguished in Section 2.5.1, aim at market imperfections. Imperfections in these policies are counteracted by policies that aim at government imperfections (Section 2.5.2).

2.5.1 Policies aimed at the reduction of market imperfections

2.5.1.1 Regulation

Regulation in the child-care market can be done via certification or (occupational) licensing.[40] Both of these measures address the second source of market imperfection, i.e. information asymmetry between consumers and providers. Certification (via self-regulation or professional norms; cf. Rose-Ackerman, 1996) is a voluntary system of licensing that sets standards, but does not restrict the practice of non-certified providers. Occupational licensing is a stricter form of regulation. It provides a standardization of skills and knowledge and/or it defines quality standards. Regulations set by the government or by the industry itself should prevent low quality providers entering the market, prevent adverse selection and moral hazard due to information asymmetry (Hofferth & Chaplin, 1998; Hotz & Kilburn, 1995; Walker, 1991) and avoid the irreparable harm of children being exposed to low quality providers (Hotz & Kilburn, 1995). Although occupational licensing limits competition and

[39] X-inefficiency or shirking (nonpecuniary benefits).

[40] Licensing requires conforming to rules related to for example minimum square footage per child, safety precautions of facilities, sanitation standards, staffing ratios, group size, staff training and staff experience (CQCO, 1995, p.15).

consumers freedom of choice more than certification, occupational licensing is favored over certification when there are significant externalities associated with the consumption of a certain service. In the child-care sector, regulation of, for example, the staff/child ratio or setting minimum educational requirements for staff reduces the availability of lower-cost alternatives (Chipty & Witte, 1997; Rose-Ackerman, 1983), and increases the price of child care (Hofferth & Chaplin, 1998; Hotz & Kilburn, 1995).[41] This may induce some parents to switch into unregulated care[42] (CEA, 1997; Hofferth & Chaplin, 1998; Hotz & Kilburn, 1995), but it also protects children and adds to the security felt by parents (CQCO, 1995; Hofferth & Chaplin, 1998).

2.5.1.2 Subsidization and taxation[43]

Subsidies are appropriate to address the third source of market imperfections, externalities. Positive externalities brought about by subsidies include the increase of women's labor force participation and economic independence. Consumer subsidies are best suited to improving access to child care, whereas provider subsidies are mainly an instrument of increasing day-care supply and improving quality (Kisker & Maynard, 1991; Maynard & McGinnis, 1995).

Consumer subsidies

Consumer subsidies, such as in-kind subsidies (mostly through vouchers) and tax credits promote the consumption of particular goods. Vouchers enable (selected) parents to purchase child-care services below their face value. Proponents of the use of vouchers see them as a combination of both public financing and competitive supply (Weimer & Vining, 1992). Critics, however, argue that vouchers do not deal with information asymmetry, because parents still cannot judge the quality of the care their child is receiving (Weimer & Vining, 1992). Furthermore, research showed that \at best, vouchers had no effect on the price, supply, and quality of day care, and at worst, they worked in the opposite direction" (Parker, 1989, p.641). Tax credits reduce the after-tax price of child care. Both kinds of subsidies can have two effects (Maynard & McGinnis, 1992). First, subsidies increase (or maintain) labor force participation, as more parents are able to purchase child care, especially low-income parents. Second, parents are able to purchase child care of higher quality. There is, however, very little empirical evidence that supports this latter suggestion (Hagy, 1998; Robins, 1991; see also Kisker & Maynard, 1991).

As far as governments are concerned, consumer subsidies for the use of child-care services mainly function as a labor market instrument and as an instrument for moving welfare recipients toward employment and economic independence. They also serve as instruments for achieving income

[41] According to Hotz and Kilburn (1995), for working women, the effect of regulation of the staff/child ratio on price (higher, and subsequently a negative effect on non-parental child-care utilization) and quality assurance (higher, positive effect on non-parental child-care utilization) cancel each other out, so that the total effect of regulation on non-parental child-care utilization is small. In contrast, regulation of the staff/child ratio has a negative total effect on child-care utilization by non-working mothers. Moreover, Hotz & Kilburn find that regulation negative affects female labor force participation.

[42] As such, regulation has a negative effect on quality of care, as parents are induced to shift away from regulated care. See also Blau and Hagy (1998) and Ribar (1995).

[43] Taxation or subsidization will lead prices to diverge from \true production costs, or marginal social costs, and consequently the price mechanism will not induce allocative efficiency" (Dollery & Worthington, 1996, p.32).

redistribution (Kisker & Maynard, 1991). Consumer subsidies are a relatively cheap instrument, that might be cost-effective for the government (Robins, 1991). In as far as the subsidization of child care enables women to enter the labor market, it leads to increased tax revenues and decreased expenses on public assistance (in case of low-income families). If the increased revenues and the decreased expenses are larger than the subsidies on child care, the child-care subsidies "pay for themselves" (Bergstrøm & Blomquist, 1994; Centraal Planbureau, 1998; Graafland, 1998; Maassen van den Brink & Groot, 1995).

Provider subsidies

Provider subsidies are most suitable when it comes to increasing the supply of child-care services or to improving the quality of child care (Hayes et al., 1990). It lowers the provider's child-care production costs, which allows them to lower their fees, while maintaining the same quality level. The subsidies can also be used to improve quality, while holding price constant (Culkin et al., 1991; Maynard & McGinnis, 1992). In the USA, it was found that extra resources (subsidies) were used to improve quality (Helburn et al., 1995). For instance, when extra resources were used to pay child-care workers higher wages, there is a decreased rate of turnover in child-care centers (a determinant of child-care quality). Two kinds of supply-side subsidies are possible: matching grants and tax expenditures (Weimer & Vining, 1992). A matching grant is a per unit subsidy to the supplier. Matching grants lead to an increased supply of child care, and thereby reduce the under-supply caused by externalities. Tax expenditures can be given in the form of deduction on the taxable revenues of day-care centers, for example. These deductions can be aimed at quality improving expenditures such as paying for care-giver training, for example.

2.5.1.3 Provision

Governments can even decide to supply child-care services themselves. This can occur when parents are not very price responsive in their demand for early education for their child (see, for example, government intervention in the supply of education). In such cases, subsidizing the cost would not produce equal opportunity (CEA, 1997). However, parents do seem to be price responsive in their demand for child care. Moreover, since there is heterogeneity in demand, government provision is less likely, because governments are not well equipped when it comes to supplying a heterogeneous set of services (Frank & Salkever, 1994, p.134). Thus there is little reason for governments to provide child care themselves.

2.5.2 Policies aimed at the reduction of government imperfections

Two generic policies that address government imperfections are found in many western countries: decentralization and privatization.

2.5.2.1 Decentralization

The delegation of tasks and responsibilities from the central government to the local government

should increase allocative and technical efficiency. Decentralization is assumed to lead to a better matching of local public goods to local preferences, because it brings consumers closer to public decisions (Rosen, 1996; Weimer & Vining, 1992). As local circumstances tend to vary, a uniform government policy will lead to losses in efficiency (Klugman, 1997). The decentralized provision of public goods is supposed to be better able to take local circumstances better into account, and therefore allocation and production should be more efficient.

2.5.2.2 Privatization: contracting out and public-private partnership

Contracting out[44]

Privatization, a withdrawal of the collective in favor of the market sector, characterizes recent government policy in many Western countries. Contracting out, (local) governments putting out the production of publicly financed services to a subcontractor, is one form of privatization (Kremers, 1996).[45] By contracting out, the provision of a service is separated from production and delivery. Competition and scale effects, associated with contracting out, should lead to efficiency gains (Stein, 1990; see also Vickers & Yarrow, 1991). Another reason for favoring privatization is the reduction of the government sector (including a reduction of the government budget deficit). Privatization is often coupled with a decrease in the number and amount of subsidies to the organizations that carry out the service. As a result, some of these organizations get into financial trouble and decide to reduce the quantity or quality of their service provision or even to cease activities altogether (Hart, Shleifer & Vishny, 1996; Van Mierlo, 1989). In the end, the gains of contracting out will of course have to outweigh the costs associated with monitoring the behavior of the subcontractor.

Contracting out also assumes that providers are able to run the day-care center like any other normal enterprise, including being efficient and flexible (Bartlett & Le Grand, 1993). The shift from a subsidized welfare organization to an organization that has to compete and negotiate with service-buyers may not be easy. [46]

The provision of semi-public goods is often contracted out to nonprofit organizations, as they are a response to both market and government failure (James & Rose-Ackerman, 1986; Young, 1986).[47] Nonprofit organizations, which can be located between for-profit and public organizations, are created by citizens who are dissatisfied with the level of provision of (semi-)public goods or services by government (Eichler, 1996; Wilderom & Joldersma, 1991; Wielers, 1991). Contracting out to nonprofit organizations may be cheaper for governments than providing the service themselves or contracting

[44] Weimer and Vining (1992, p.148)

[45] Another form is for example the establishment of quango's, organizations that carry out a public task, are financed by the government, but do not have a direct hierarchical relation with a department or minister (see Van Thiel, Leeuw & Flap, 1998).

[46] Hanushek (1986), in an article on efficiency in public schools, states that \educational decision makers (...) may not understand the production process and therefore cannot be expected to be on the production frontier" (p.1166). The same might hold for decision-makers of day-care centers.

[47] According to Burger and Dekker (1998) the Netherlands has the largest nonprofit sector. Well over 12 percent of the labor force works in the nonprofit sector, compared to a European average of 7 percent.

out to for-profit organizations.[48]

A major advantage of nonprofit organizations over government is that they receive parts of their revenue from the sale of output.[49] Moreover, multiproduct nonprofit organizations can earn a profit from one set of activities and spend this profit on the development of other (new) activities.[50] Nonprofit organizations are therefore assumed to be more responsive to differences or changes in demand than public organizations. This allows them to be more flexible in the mix of services they provide (Frank & Salkever, 1994, p.134; Rose-Ackerman, 1996; Van Mierlo, 1989; Weimer & Vining, 1992). Nonprofit organizations can, however, assumed to be not as efficient as for-profit organizations,[51] as they lack the profit motive that encourages efficient production. This inefficiency may be compensated for by the fact that nonprofit organizations are more trustworthy, and therefore less costly in terms of monitoring. Another advantage, that would seem to apply more to the USA than to the Netherlands, is that nonprofit organizations are allowed to receive donations from charitable organizations or citizens and this helps them keep their costs down (James, 1986).

The advantage that nonprofit organizations have over for-profit organizations is closely associated with the monitoring of costs (Sappington & Stiglitz, 1987; Weisbrod & Schlesinger, 1986; also see Frank & Salkever, 1994). The non-distribution constraint restrains the manager of a nonprofit organization from behaving opportunistically,[52] whereas managers of for-profit organizations have (more) incentives to `cheat' on their principals (CQCO, 1995; James & Rose-Ackerman, 1986; Kagan, 1991; Rose-Ackerman, 1996; Weisbrod & Schlesinger, 1986). Thus, the principal (or customer) will have to make fewer monitoring costs when dealing with nonprofit organizations than would be made in dealings with for-profit organizations. For governments, the requirement of nonprofit status is an easy alternative, as it affords some assurance that the subsidy will indeed be spent on the intended purpose (Baum & Oliver, 1996; James, 1986). This explains why in some countries only nonprofit day-care centers are eligible for government funding. Furthermore, nonprofit organizations may operate as agents of trust for consumers who are not able to discern quality differences and may therefore be more trustworthy than their for-profit counterparts (Eichler, 1996; Frank & Salkever, 1994; Rose-Ackerman, 1986; 1996). If the provided good or service is complex and costly to monitor (for example a trust good, such as child care), nonprofit organizations have an much clearer advantage over for-profit organizations (Baum & Oliver, 1996; Hansmann, 1986; Weisbrod & Schlesinger, 1986). Nonprofit organizations can therefore be seen as a response to information imperfections when trust and altruistic motives are important (Rose-Ackerman, 1986).

Public-private partnership

In the Netherlands, child-care policy can be characterized as a public-private partnership (PPP).

[48] The size of the nonprofit sector is positively related to the share of government finance. This may indicate that the nonprofit sector is called in by governments to provide collective goods (Burger & Dekker, 1998).

[49] \Relying on nonprofit organizations to arrange cross-subsidies that pay for collective goods may have lower transaction costs and be less distortionary than would relying on existing public taxation and supply mechanisms" (Frank & Salkever, 1994, p.135).

[50] Research by Moret, Ernst & Young (1996, p.47) indicates that this the case in the day-care sector.

[51] Nonprofit firms are also at a disadvantage relative to for-profit firms with respect to access to capital, and speed of entry and growth in expanding markets (Hansmann, 1986, p.80).

[52] For example, by exploiting their informational advantage to reduce costs at the expense of quality.

Public-private partnerships tack between market and government failure (Bartelsman et al., 1998). When compared to a private enterprise, government is badly equipped for the efficient undertaking of commercial activities and it has less experience in this type of endeavor. According to Bartelsman et al. (1998, p.D6-7) there are three characteristics that make PPP a suitable instrument: (1) there is a complex product, which makes it difficult to define everything beforehand and to write everything down in a contract, (2) both parties have a lasting interest in the project, and (3) an early exchange of knowledge is important. The first characteristic seems relevant to the child-care market. Child care is a complex good and production is difficult to define beforehand (also see Section 2.2.2).

2.6 Summary

In this chapter we indicated some of the special characteristics of the child-care market. The child-care market is a market where multidimensional and differentiated sets of services are traded and where the local market consists of heterogeneous providers (Helburn et al., 1995; Walker, 1991). These characteristics are sources of market imperfections, which may be a reason for governments to intervene in a market. Section 2.2. elaborated on the sources of market imperfections. Market imperfections in the child-care market are caused by monopolistic competition, information asymmetry, and externalities. Monopolistic competition does not seem to be a great problem in the child-care sector as its disadvantages (higher prices and fewer places compared to a situation of pure competition) seem to be compensated by the fact that product variety largely corresponds to the need for variation on the part of the consumers. Information asymmetry causes more concern. Information asymmetry between providers and consumers is inherent to the trust-good character of child care. Asymmetrical information engenders a tendency towards moral hazard and adverse selection, which in turn has a downward effect on the number of places and the quality of care. There are also (positive) externalities in the child-care sector. Day care may lead to an increase in female labor force participation and to economic independence for men and women. Section 2.3 described equity considerations, like the accessibility of care and an equitable distribution of clients, which may also be a reason for governments to intervene in a market. In sum, these imperfections and concerns are sufficient reason for government to intervene in the child-care market, and they also indicate that a (full) transition from welfare to market may not be desirable.

However, interventions by government are not perfect either. Two sources of government imperfection were presented in Section 2.4: the disjunction between costs and revenues and information asymmetry. These two lead to a situation in which the day-care center decision-maker tends to spend more resources than necessary to produce a certain output. An overview of possible types of government intervention, that take care of market imperfections and/or government imperfections, is given in Section 2.5. Market imperfections can be addressed by regulation, subsidization, or provision. Two policies that address government imperfections can be distinguished: decentralization and privatization (amongst which public-private partnership). Several of these interventions are found in the Dutch child-care sector. Government policy in the 1990s can be characterized as a mix of subsidization, decentralization, and privatization.

CHAPTER 3

Explaining day-care supply

3.1 Introduction

This chapter presents two theoretical models that try to explain the supply of day care. First, in Section 3.2 a model is developed to explain day-care supply in municipalities (Research Question 1a). Also, hypotheses on changes in the effects of the factors that explain day-care supply in municipalities are formulated (Research Question 1b). Second, in Section 3.3 a model is presented that tries to explain differences in supply among day-care centers. This model also allows us to investigate how the ending of the Stimulative Measures, and the subsequent transition of the day-care sector from a welfare to a market orientation coupled with increased commercialization has affected differences in supply among day-care centers (Research Question 2). Section 3.4 summarizes this chapter.

3.2 Explaining day-care supply in municipalities

How does day-care supply in a municipality come about? First, parental demand is important. The emancipation of women, starting in the 1960s, led to an increased participation in the labor market and to an increased demand for day-care facilities (Tijdens & Houweling, 1993a; Van Dalen, 1995). Second, demand for day care by municipalities can be expected to affect day-care supply in municipalities. With the introduction of the Welfare Law in 1987, which replaced the National

Funding Arrangement for Day-Care Centers, municipalities became fully responsible for day care. Municipalities could now determine themselves whether and under what conditions day care would be subsidized (Zwier, 1989).[53] Third, demand for day care by employers can be expected to affect day-care supply in a municipality. As described in Chapter 1, employers became structurally involved in the day-care sector in the 1990s as buyers of day-care places for their (female) employees. Fourth, because the effective demand of parents is not large, the supply of day-care does not come about easily (see Chapter 2). Parents may therefore exert pressure on (local) politicians to create more day-care facilities or to subsidize day care. Parents can exert this pressure by voting in municipal council elections. The council being the only policy actor at the level of the municipality that is chosen by the citizens. Thus, in addition to the possible direct effect demand for day care by parents has on day-care supply, there may also be an indirect effect of demand for day care by parents, via the composition of councilors elected to the municipal council.

In sum, three parties demanding (and financing) day care can be distinguished: (1) parents, (2) the municipality, and (3) employers. The effects of demand by these three parties on day-care supply in municipalities will be discussed in this section as well as the indirect effect of demand for day care by parents on day-care supply.

3.2.1 Demand for day care by parents

Several studies have investigated factors affecting demand for day care by parents (see, for example, Lehrer & Kawasaki, 1985; SER, 1998; Van Dijk, 1994; Van Dijk & Remery, 1997; Veum & Gleason, 1991). Decisions about the use of day-care facilities are made by parents who can be assumed to strive for the maximum realization of their goals. In their decision-making they are restricted by monetary and time constraints as well as by norms (Van Dijk, 1994). First, the costs parents have to make for child care affect whether parents use child care and, subsequently, which mode of child care they will choose. The costs of child care are affected by the number of children parents have. The more children parents have, the higher the total costs of day care as the cost of care is quoted on a per-child basis. As the number of children under four years in a family increases, home care (baby sitter) is a cheaper alternative to formal day care, because the costs of care at home tend to be the same for one or more children (Johansen, Leibowitz & Waite, 1996).

H1a: *The more children up to four years per family, the less day-care supply in a municipality.*

Parental income is a second factor affecting demand for day care. Day-care services can be assumed to be `normal' goods,[54] therefore income can be expected to have a positive effect on the demand for day-care: families with high incomes use day-care services more often (see, for example, Groot & Maassen van den Brink, 1998; Veum & Gleason, 1991).

[53] It should be noted that municipalities do not supply day-care services themselves. They contract this out to existing welfare organizations or newly created day-care organizations.

[54] Normal goods are defined to be goods for which demand increases as income rises.

H1b: *The higher parental income, the more day-care supply in a municipality.*

Also the presence or absence of a partner can be expected to affect demand for day care. Single parents have a greater need for day care than non-single parents. If they want to get a job or follow a training course they have to rely on day care (either formal or informal). Research in the United States showed that single mothers use child-care centers more often than married women (Veum & Gleason, 1991). In the Netherlands, the effect of having a partner might be small, because single parents with young children are not forced to apply for jobs.[55]

H1c: *The more single parents in a municipality, the more day-care supply in a municipality.*

A second factor related to time constraints is the distance to a day-care center (for example, Kisker & Maynard, 1992). The closer parents live to a day-care center, the lower the time costs, and the more day care will be demanded.

H1d: *The closer parents live to a day-care center, the more day-care supply in a municipality.*

Next to monetary and time restrictions, people are also constrained in their behavior by norms. Norms of parents' significant others (like their family or friends) with respect to the use of day-care centers can be expected to affect parents' demand for day care. Norms with respect to the use of a day-care center run from traditional to modern. In the traditional perception women are supposed to stay at home and take care of the children. By contrast, more modern views allow mothers to have a paid job and to use a day-care center for the time that they are out at work (Van Dijk, 1994). It can be expected that the more modern the norms with respect to the use of day-care centers, the more (formal) day care will be demanded.

H1e: *The more modern the norms of parents' significant others with which parents are faced, the more day-care supply in a municipality.*

Moreover, the supply of substitutes to formal day care, such as informal day care, may affect demand for formal day care. It can be expected that if there is less informal day-care supply in a municipality, there will be relatively more demand for formal day care.

H1f: *The more informal day-care supply there is in a municipality, the less (formal) day-care supply in a municipality.*

3.2.2 The composition of the town council

Choices concerning the allocation of a municipality's budget are made by the town council. Following Gustafsson and Stafford (1992) and Van Dijk et al. (1993) it can be assumed that the composition of town council (in terms of the percentage of left-wing councilors and percentage of

[55] However, there now are plans by the Minister of Social Affairs to also force parents with young children to apply for jobs.

female councilors) would have an effect on (the amount of subsidized) day-care supply in municipalities. Left-wing and female councilors who want to be re-elected are assumed to have more interest in expanding day-care supply. At the national level, the strongest support to the establishment and supply of day care can be found among the left-wing parties. We expect that this is also true for left-wing politicians in the town council. Also an effect can be expected from the composition of the town council with respect to gender, because it can be assumed that female councilors show more attention to the interests of women, including the supply of day care. It can then be expected that as there are more left-wing and female councilors, more money for day care will be available in these municipalities, and more day care will be supplied.

H2a: *The higher the percentage of left-wing councilors, the more day-care supply in a municipality.*

H2b: *The higher the percentage of female councilors, the more day-care supply in a municipality.*

3.2.3 Demand for day care by employers

It can be expected that relatively more employer-financed care is offered to employees in sectors where many (highly skilled) women are employed. In sectors where employers are not as dependent on female workers, less day care will be financed for employees (Schippers & Siegers, 1992). Research by Groot and Maassen van den Brink (1997, p.122) showed that the government (as employer) and companies in the non-commercial services sector offer a comparatively large amount of day-care facilities to their employees (see also Schippers & Siegers, 1992, and Arbeidsinspectie, 1997). Similar results were found by Van den Brekel (1997) who investigated the inclusion of day-care arrangements in collective labor agreements. The highest degree of inclusion was found in two non-commercial service sectors: government agencies and educational institutions (see Hayghe (1988) for similar findings for the USA). In other non-commercial services far fewer arrangements were included in the collective labor agreements. Day-care supply in municipalities can therefore be expected to be higher, the higher the percentage of government agencies in a municipality, and the higher the percentage of educational institutions in a municipality.

H3a: *The higher the percentage of government agencies in a municipality, the more day-care supply in a municipality.*

H3b: *The higher the percentage of educational institutions in a municipality, the more day-care supply in a municipality.*

The decentralization of policy and the public-private partnership, discussed earlier in Chapter 1, imply a changed role for parents, municipalities, and employers in the day-care sector. Below the possible changes are discussed.

3.2.4 Indirect effects of demand for day care by parents on day-care supply

As was stated in the introduction to this section, voters can be assumed to exert pressure on local politicians to create day-care facilities or to increase existing day-care supply. It can be assumed that parents vote for parties or councilors who serve their day-care interests, in this case left-wing and female councilors (Van Dijk et al., 1993). Therefore the factors related to demand for day care by parents will not only directly affect day-care supply (Hypotheses 1a - 1f), it will also affect it indirectly. These factors can be expected to affect the composition of the town council, which in turn affects day-care supply in a municipality (Hypotheses 2a and 2b). However, day-care supply is of course not the only issue of interest to those who vote. In general, it can be expected that people will vote for the party whose policy will bring them the greatest utility (Downs, 1957). In terms of one of the factors related to demand for day care by parents, income, Downs instrumental theory would predict that higher income parents would vote right-wing instead of left-wing. The instrumental theory does not lead to different predictions with respect to voting behavior for the other factors. The signs of these factors are therefore the same as in Hypotheses 1a and 1c-1f.

H4a: *The more children up to four years per family, the lower the percentage of left-wing and female councilors.*

H4b: *The higher parental income, the lower the percentage of left-wing and female councilors.*

H4c: *The more single parents in a municipality, the higher the percentage of left-wing and female councilors.*

H4d: *The closer parents live to a day-care center, the lower the percentage of left-wing and female councilors.*

H4e: *The more modern the norms parents are faced with, the higher the percentage of left-wing and female councilors.*

H4f: *The less informal day-care supply there is in a municipality, the higher the percentage of left-wing and female councilors.*

3.2.5 Changes in the effects of explanatory variables on day-care supply in municipalities

3.2.5.1 Parents

Parental income can be assumed to have become a more important factor determining day-care supply in municipalities. More employer-financed places became available between 1989 and 1995 implying first that the percentage of (children from) working parents making use of day-care centers increases, since employed persons have a higher income compared to non-working parents, and second, because companies will offer more day care to higher skilled and better paid employees, the

proportion of better paid parents making use of child-care facilities also increases.[56] Data from SGBO (Mutsaers, 1997, 1998) point in this direction. Although the percentage of employer-financed places increased considerably, the employer share in day-care finance remained stable at 20% between 1993 and 1996, whereas relative parental contributions increased from 27 to 42%. This suggests that employers shift part of the financial burden to parents.

H5a: *The effect of parental income on day-care supply in municipalities increased between 1989 and 1995.*

The effect of the relative number of single parents on day-care center supply in municipalities is probably not constant over time. Between 1989 and 1993 the relative number of single parents can be expected to become a less important factor affecting day-care supply in municipalities, due to the increase in employer-financed places. These places are more likely to be occupied by children with non-single mothers (most of the single parents are women) than by children whose mothers are single, as participation by single mothers in the labor force is lower than participation by non-single mothers (58% and 82% respectively in 1993) (Ministerie van VWS, 1997, p.18). It is therefore, almost by definition, much more difficult for single mothers to find a place in a day-care center for their child(ren). In 1994, however, the Dutch government offered municipalities more discretion in their approach to lowering the number of people who lived on welfare (Van den Akker & Henkens, 1998). One way to reach this goal is to offer day care to single mothers while they look for a job and, if they have a job, provide day care when they are at work. It can be expected, therefore, that after 1994 the relative number of single parents will become a more important factor determining day-care supply in municipalities.

H5b: *The effect of the relative number of single parents on day-care supply in municipalities first decreased (from 1989-1993), and then increased (1994-1995).*

3.2.5.2 Town Council & employers

The decentralization of policy implementation to the municipalities has, on the one hand, made the role of town councils more important. Municipalities had to apply for the day-care subsidies, and town councils with relatively many left-wing or female councilors can be assumed to have put more effort into and been more successful obtaining them. This means that, under the Stimulative Measures, these municipalities have probably considerably increased their level of day-care supply, which in turn implies an increased effect of the composition of town council on the total number of day-care places in a municipality. On the other hand, the public-private partnership and the subsequent increase in employer-financed day care has made the employer more important, and thus town councils less important in the day-care sector. (The share of government in day-care finance decreased from 56% in 1989 to 37% percent in 1995).

H5c: *The effect of the percentage of left-wing councilors on day-care supply in municipalities can be expected to have increased first, but also to have decreased gradually between 1989 and 1995.*

[56] This also means that changes in the effect of average per capita income on day-care supply in municipalities are expected to be caused by changes in composition, not by changes in behavior.

H5d: *The effect of the percentage of female councilors on day-care supply in municipalities can be expected to have increased first, but also to have decreased gradually between 1989 and 1995.*

H5e: *The effect of the percentage of government agencies in a municipality on day-care supply in municipalities increased between 1989 and 1995.*

H5f: *The effect of the percentage of educational institutions in a municipality on day-care supply in municipalities increased between 1989 and 1995.*

The hypothesized effects of demand by parents, municipalities, and employers day-care supply in municipalities are summarized in Table 3.1.

Table 3.1 Hypotheses with respect to differences in day-care supply in municipalities.

	DEPENDENT VARIABLES		
	Percentage left-wing and female councilors	Day-care supply in municipalities	Change in the effect between 1989-1995
INDEPENDENT VARIABLES			
Demand by parents			
H1a Number of children up to four years per family	-	-	
H1b Parental income	-	+	**H5a** +
H1c Relative number of single parents	+	+	**H5b** first - / then +
H1d Average distance to a day-care center	-	-	
H1e Norms (modern)	+	+	
H1f Informal supply (more)	-	-	
Composition of Town Council			
H2a Percentage of left-wing councilors		+	**H5c** first +/ then -
H2b Percentage of female councilors		+	**H5d** first +/ then -
Employment structure			
H3a Percentage of government agencies		+	**H5e** +
H3b Percentage of educational institutions		+	**H5f** +

(+: positive effect, -: negative effect).

3.3 Explaining differences in the supply among day-care centers

In this section a theoretical model will be developed which tries to explain differences in supply among day-care centers. For this purpose, we will go to the level of the individual day-care center (see

also Coleman, 1990). This is necessary because it is at this micro-level where the relevant decisions about supply are made. In the end, actual decisions concerning day-care supply are made by the day-care center decision-makers: the location manager of the day-care center and their directors. The explanatory scheme in this section focuses on this micro level. Eventually, the choice behavior of the individual decision-maker, given the demand for day care, leads to a certain supply of day care at the firm level. These individual supplies can eventually be aggregated to the macro level, i.e. the aggregated supply of day care in the Netherlands. We will first go into the monetary restrictions with which the day-care center decision-makers are faced. After that a broader menu of restrictions will be discussed, using the social production function theory.

3.3.1 Monetary restrictions

From the point of view of economic analysis, the relevant monetary restrictions of day-care center decision-makers relate to costs and revenues of the day-care center. The transition from welfare to market implied in fact the falling off of the day-care subsidies. This gave day-care centers an incentive to decrease their costs and/or increase their revenues per child place. The day-care center's decision-maker can reduce costs by producing more efficiently, by decreasing quality or by both. More revenues per child place can be generated by increasing the percentage of employer-financed and/or private places, by charging higher prices, or by all three. Figure 3.1 shows the decision-maker's possible responses to subsidy losses.

Decrease costs per child place

Increasing efficiency assumes that, previously, day-care centers were not operating on their potential production frontier, i.e. there was slack. The MDW Study Group on Child Care sees evidence of this in the fact that there is large variation in the cost price of day-care places (somewhere between NLG 16,500 and NLG 19,000 per full-time place per year) and in the low degree of occupancy (somewhere between 82% and 84%) (MDW, 1998, p.26). Decreasing quality, the second way in which centers can reduce costs per child place, implies, for example, decreasing the number of staff members per child or hiring less expensive, less educated staff members.

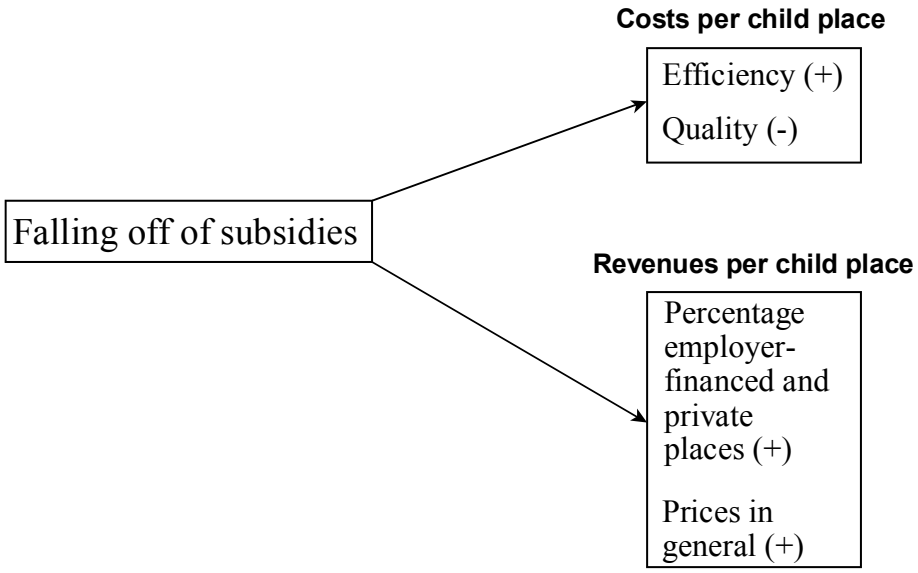


Figure 3.1 Behavioral responses of day-care center decision-makers to subsidy loss.

The salary restructuring that took place in the child-care sector during the early 1990s, brought wages in the child-care sector more in line with wages paid on the market,[57] and probably increased the incentive for day-care center decision-makers to control costs per child place by decreasing quality rather than by producing more efficiently. As the costs of employees are by far the largest budget item in day care centers (about 70%), increase in wages has a considerable effect on the cost price of child care (MDW, 1998, p.18-9).[58] Moreover, information asymmetry between provider and consumer leads to a situation in which low-quality providers can charge the same fees as high-quality providers. There are no incentives for the provider to improve quality, because the extra costs per child place cannot be compensated by charging higher fees. This will drive out high-quality providers, and average quality will decrease (CQCO, 1995, p.16; also see the discussion on moral hazard in Section 2.2.2).

Increase revenues per child place

Day-care centers can generate more revenue per child place by creating more employer-financed and/or private places (Ministerie van VWS, 1998) or by increasing prices in general. Increasing

[57] The average rise in wages between 1989 and 1993 was 15 percent. In the child-care sector wages increased with 22 percent (MDW, 1998, p.18-19).

[58] However, the increased labor costs are not reflected in increased cost prices: in the first half of the 1990s there was very little change in the cost price of child care. Between 1989 and 1995 the cost price (per occupied place) increased from NLG 14,200 to NLG 14,295 (calculated in constant 1989 guilders) (Ministerie van VWS, 1997, p.26). This might indicate that, assuming no increases in efficiency, the same amount of money (total employee costs) is divided over fewer people.

revenue per child place by increasing the number of employer-financed and/or private places is possible, because employers and parents (as buyers of private places) are charged higher prices than municipalities.[59] Earning money on one set of activities (in this case employer-financed and/or private child care) to finance other activities (here subsidized child care) has parallels in other welfare sectors (Tuckman, 1998). Increasing the percentage of employer-financed and/or private places will lead to a relative decrease in the availability of places accessible to every parent (i.e. subsidized places). There may of course be a growth in the absolute number of subsidized places.

Increasing prices in general is a second way of generating more revenue. However, this does not seem to be likely as many day-care center managers do not see increasing prices as a feasible alternative, because the purchasers of child care (parents, employers, and government) already perceive the child-care fees they currently pay to be high (Moret Ernst & Young, 1996, p.15). After day-care subsidies fell away, selling prices (corrected for inflation) only increased by 1.8% per year, compared to an average rate of increase of 2.4% per year under the Stimulative Measures.[60]

Taken together, the falling away of subsidies can lead to four possible (combinations of) effects: (1) an upward effect on technical efficiency of day-care centers, (2) a downward effect on the quality of care, (3) an upward effect on the relative number of employer-financed and/or private places, and (4) an upward effect on day-care prices in general.[61] It should be noted that it is not necessary that all effects occur simultaneously. Depending on circumstances, centers can choose to trade off one element against other elements. For example, in a center where the quality of care is very important, quality can be traded off against the percentage of employer-financed and/or private places. Figure 3.2 illustrates the interrelationship of efficiency, quality, the percentage of employer-financed and/or private places, and price.

[59] The data collected for this study indicate a mean full-time price per year of subsidized places of NLG 15,900. The mean price of employer-financed places is more than NLG 1,000 higher: NLG 17,232. Private places cost on average NLG 16,200. Further (circumstantial) evidence is given by the remark in a report of the child-care employers organization VOG that prices should be equal for both subsidized and employer-financed places (VOG, 1996, p.7). From this we can also conclude that the prices of subsidized places are lower (probably not higher) than the prices of employer-financed places.

[60] The selling price of child care increased from NLG 12,500 in 1989 to NLG 16,890 in 1995 (NLG 14,370 in 1989 guilders) (Ministerie van VWS, 1997, p.26). In 1996 the price was NLG 17,890 (NLG 15,422 in 1989 guilders) and in 1997 the price was NLG 18,060 (NLG 15,305 in 1989 guilders) (SGBO, 1999).

[61] We refer to this as an increase in price in general, because the increase in the relative number of employer-financed and/or private places can also be seen as an increase in price, which is however not translated into a higher price parents pay.

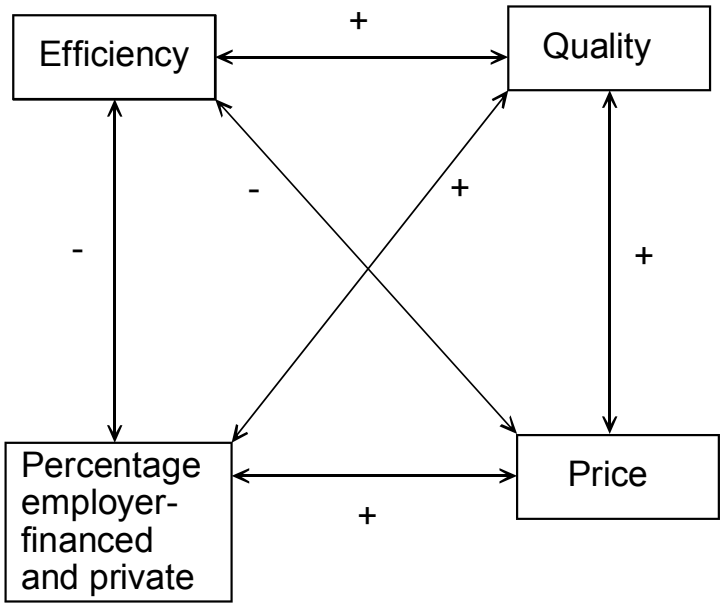


Figure 3.2 Interrelationship of the efficiency, quality, percentage of employer-financed places, and prices.

First, efficiency can be expected to have a positive interrelationship with quality. Increased efficiency enables centers to invest more money in quality, whereas a stronger focus on quality demands" more efficiency. Second, increased efficiency enables centers to decrease their prices, whereas centers that want to have lower prices will have to be more efficient. Third, efficiency can be expected to be negatively interrelated with the percentage of employer-financed and/or private places. The more subsidy loss a center can meet by increasing efficiency, the less increase will be required in the percentage of employer-financed and/or private places. By contrast, relatively more employer-financed and/or private places (implying more revenue) will put less pressure on centers to increase efficiency. The reasoning is analogous for the fourth (quality and the percentage of employer-financed and/or private places) and fifth interrelationship (quality and price). Quality can be expected to be positively interrelated with the percentage of employer-financed and/or private places and price. Relatively more employer-financed and/or private places or higher prices imply more revenue, which makes higher quality possible. By contrast, centers that focus on quality may increase the percentage of employer-financed and/or private places and/or prices, which enables them to provide higher quality care. The sixth interrelationship is between price and the percentage of employer-financed and/or private places. Higher prices will mainly be paid by employers or wealthy parents, implying a higher percentage of employer-financed and/or private places. Conversely, it can be expected that prices are higher in centers with relatively large number of employer-financed and/or private places. Centers with relatively more subsidized places will probably also strive for low prices, thereby increasing accessibility.

3.3.2 A broader menu of restrictions: social production functions

What other aspects are relevant to decision-making? In order to come to a broader view of possible restrictions we use social production function theory. Derived from this theory, hypotheses will be formulated on the expected effect of the explanatory factors on day-care supply. The specific dimensions of day-care supply that will be focused on in this section are the four dimensions discussed in the previous section: efficiency, quality, the percentage of employer-financed and/or private places, and price.

In explaining micro-level behavior, our point of departure is the assumption that people strive to maximize certain goals and, since they are restricted by the available resources, they have to make choices on how to reach these goals (Boudon, 1981). The result of this process of choice is the individual decision-maker's behavior. The (ultimate) goals are assumed to be stable and the same for everyone (Stigler & Becker, 1977). If so, differences (changes) in behavior can only be explained by differences (changes) in restrictions (Siegers, 1992). In their decision-making regarding the combination of resources to be used, people are assumed to use the combination that will eventually yield them the highest (subjectively expected) utility. The maximization of goals at given restrictions leads to a set of structural equations for differences (changes) in day-care supply. These structural equations will be converted into a set of reduced form equations, from which hypotheses on the effect of the restrictions on differences (changes) in the supply of day-care centers will be derived.

The distinction between goals and restrictions seems to be a useful one, but what exactly are these goals and restrictions? Becker (1965) gives an initial onset with his household production function theory, but he does not specify the meta-economic goals (Siegers, 1992). In his *social* production function approach, Lindenberg (1990, 1991, 1992, 1996) gives a suggestion as to what the goals and restrictions might be and how they are related. Two universal ultimate goals are distinguished by Lindenberg: physical well-being and social well-being. Both of them can be achieved via lower level, intermediate goals. Physical well-being can be produced by the first-order instrumental goals comfort and stimulation (Wippler, 1987, p.230). Social well-being is produced by the first-order instrumental goals affection, status, and behavioral confirmation. In turn, the first-order instrumental goals can be produced by second-order instrumental goals. So, there is a hierarchy of goals: goals at a lower level are instrumental in producing higher level goals (Siegers, 1992). Social production functions relate goals at different levels. As such, social production functions operate as restrictions. For example, the production function of physical well-being sets a maximum to the amount of physical well-being that can be produced at certain levels of comfort and stimulation. Moreover, if for example stimulation has been cut off, one is restricted to using comfort only as a way of producing physical well-being. Other restrictions with which the decision-maker is faced are time and budget restriction. Time and money are scarce resources that impose restrictions on the behavior of the decision-maker.

Three levels at which the restrictions confronting the managers of day-care centers can be found - derived from the social production functions - are identified below: (1) the level of the decision-maker of the day-care center, (2) the level of the organization (day-care center itself and its umbrella organization), and (3) the level of the environment of the center.

3.3.2.1 The level of the decision-maker

Physical well-being is assumed to be produced by comfort and stimulation. Stimulation, which can be either mental or physical or both, is not assumed to play an important role in current decision-making. Comfort usually refers to the consumption of commodities and the initiation of leisure activities (see, for example, Van de Goor, 1997; Van der Lippe, 1993). The day-care center's decision-maker can produce comfort by the absence or avoidance of conflicts and low work pressure. Conflicts can arise when, for example, the day-care center's decision-maker chooses to supply day care that her staff considers to be of low quality. It can be assumed that conflicts might arise sooner in smaller day-care centers than in larger day-care centers, because personal relationships are more important in the smaller centers. Child-care staff members in a larger organization may be more professional and more willing to accept "orders" from their directors. Low work pressure can be achieved by a variety of factors such as for example a constant source of revenue (implies less time spent on negotiating with potential clients), a clear division of tasks in the day-care center, and relatively many (but not too many) employer-financed places. Employer-financed places yield more revenue per child place than subsidized places, but a structural basis of a number of subsidized places is necessary as a certain source of revenue.

Social well-being can be produced via status, affection and behavioral confirmation. Affection may be derived from a partner and from one's own children. However, affection is not assumed to play an important role in the decision-making of the location manager of a day-care center. Status and behavioral confirmation can be achieved via goals lower in the goal hierarchy. Production factors of status for the location manager may be the size of the day-care center (cf. Hoxby, 1995, p.7), the number of employer-financed places, being known as a good employer (Remery, 1998, p.49), and the center's trading result. The decision-maker produces behavioral confirmation by conforming to the norms of significant others, and in this study this will be the most important factor of social well-being.

Norms with respect to quality and equity can be expected to affect the decision-maker's behavior. It can be expected that the stronger the norms of the significant others with respect to either of these two elements, the more the decision-maker will conform to these norms. In a day-care center where there are strong norms with respect to quality, quality will probably be higher. In turn, this will have an upward pressure on efficiency, prices, and/or on the percentage of employer-financed and/or private places. Strong norms with respect to equity can be expected to lead to the reverse: fewer employer-financed and/or private places, lower prices, and as a result an upward pressure on efficiency, and a downward pressure on quality. This leads to the following hypotheses:

H6a: *The stronger the norms of the significant others with respect to quality, the higher the center's quality of care tends to be, the higher efficiency, the higher the percentage of employer-financed and/or private places, and the higher prices.*

H6b: *The stronger the norms of the significant others with respect to equity, the lower the percentage of employer-financed and/or private places, the higher efficiency, the lower the center's quality tends to be, and the higher prices.*

Location managers differ in the extent to which they can make their own decisions as far the running of the day-care center is concerned. The more discretion a location manager has, the more visible the relationship between outputs and inputs, so a positive effect on efficiency can be expected. In turn, this efficiency can be used to charge lower prices, improve quality, and/or decrease the percentage of employer-financed and/or private places.

H7: *The more discretion the day-care center decision-maker has, the more efficient the center will be, the higher its quality tends to be, the fewer employer-financed and/or private places, and/or the lower prices.*

Moreover, the more human capital a decision-maker has, the better able he or she can be expected to be in achieving his or her goals, and hence the higher efficiency. In turn, this higher level of efficiency can be used to improve quality, lower prices, and/or a lower percentage of employer-financed and/or private places. Therefore:

H8: *The more human capital the decision-maker has, the higher efficiency, the higher quality, the lower the percentage of employer-financed and/or private places, and the lower prices*.

3.3.2.2 The level of the organization

At the level of the organization several structural factors, that are part of the production function of day-care centers, can be distinguished. It is also at this level that one of the two factors is found that help us answer Research Question 2, namely whether the day-care center is nonprofit or for-profit. The other factor, competition on the local market, can be found at the level of the environment (Section 3.3.2.3). Research Question 2 aims at analyzing the effect of commercialization on day-care supply. Whether the center is nonprofit or for-profit and whether there is competition on the local market runs parallel with the issue of commercialization. For-profit centers are assumed to be more market-oriented than nonprofit centers. And, in the local market where there is (more) competition, there is also more commercialization. Thus, the effects these two factors will have on day-care supply will tell us how commercialization affects day-care supply.

The nonprofit character of a large number of day-care centers implies that these centers are not primarily interested in making money. This increases the relative weight of behavioral confirmation and reduces the incentive to produce efficiently, compared to their for-profit counterparts. Thus their level of efficiency tends to be less (see, for example, Mocan, 1997; Preston, 1988; Rose-Ackerman, 1996). In the face of inefficiency, prices tend to be higher. Studies by Blau and Hagy (1998), Hagy (1998), and Powell and Cosgrove (1992) have shown that prices are higher in for-profit centers. However, given a higher relative weight of behavioral confirmation nonprofit day-care centers will put a higher premium on conforming to norms than for-profit centers, leading to higher quality and/or higher accessibility (relatively less employer-financed and/or private places). Several studies have shown that quality is higher in nonprofit centers than in for-profit centers (CRRU, 1999; Culkin et al., 1991; Friesen, 1995; Kagan, 1991; Mukerjee & Witte, 1993; Preston, 1993). Moreover, salaries are

also higher in nonprofit centers, implying lower staff turnover rates, and (probably) reflecting relatively more higher educated staff, and thus higher process quality (CQCO, 1995; Culkin et al., 1991; Kagan, 1991; Preston, 1988). Therefore:

H9: *Compared to for-profit centers, nonprofit centers can be expected to be less efficient, to supply higher quality day care, to have fewer employer-financed and/or private places, and to have higher prices.*

Some day-care centers are part of an umbrella organization that carries out diverse tasks, in fact day care is not their core business. Most of these umbrella organizations are welfare organizations with a small number of day-care centers. It can be assumed that welfare organizations have a primary interest in day care that is accessible to many parents, so their centers should be more accessible than centers that do not have the same task diversity. Higher accessibility implies less revenue as these centers have relatively fewer employer-financed places and charge lower prices. This will have a downward effect on day-care quality and an upward effect on efficiency when compared to umbrella organizations without diversity.

H10: *If there is diversity in tasks, there will be more efficiency, lower quality of care, fewer employer-financed and/or private places, and lower prices.*

Discretion is very limited within day-care centers that belong to a national chain. Prices of day-care places at these centers are set at the national level, so for the decision-makers within these centers there is less incentive to produce efficiently (see the discussion on the disjunction between cost and revenues in Section 2.4.1, and Section 2.4.2 for the principal-agent problem). This has an upward effect on price, and a downward effect on quality. Furthermore, the national chains are probably a large contracting party for employers, but also for municipalities. It is therefore difficult to say whether centers that belong to a national chain have more employer-financed places than centers that do not belong to such a chain.

H11: *If the day-care center is part of a national chain, it will be less efficient, tend to provide care of lower quality, and charge higher prices.*

Larger day-care centers may be more efficient, because of economies of scale. There are economies of scale if a proportional increase in the number (or hours) of infant-toddler, preschoolers, and school-age children brings about a proportionally smaller increase in total variable cost (Mocan, 1997). The CQCO study (1995) found that centers that had longer hours of operation or served larger numbers of children had lower expended costs per child per hour with no apparently negative effect on the quality of care. Powell & Cosgrove (1992) estimated that a 10% increase in the number of children leads to a roughly 8% decrease in average cost. In turn, increased efficiency will enable centers to provide care that is of higher quality, to have fewer employer-financed and/or private places, and to lower prices.

H12a: *The more children are served in a day-care center, the more efficient the center, the higher its quality, the fewer employer-financed and/or private places, and the lower prices.*
H12b: *The more hours per day the day-care center is open, the more efficient the center, the higher its quality, the fewer employer-financed and/or private places, and the lower prices.*

Next to economies of scale, there may also be economies of scope. Day-care centers that have multiple products, like services for infant-toddlers, preschoolers, and kindergarten-school age children, may be able to produce more cheaply than centers that have single outputs (Mocan, 1997). In such cases there are economies of scope, i.e. there are complementaries between groups of outputs. It is cheaper to produce jointly than separately. Also here the increased efficiency will enable centers to provide care that is of higher quality, to have fewer employer-financed and/or private places, and to lower prices.

H13: *If the day-care center has multiple outputs, it will be more efficient, provide care of higher quality, have fewer employer-financed and/or private places, and have lower prices.*

The individual decision-maker is embedded in a day-care center. The day-care center and the people who work there have their own standards and values concerning day care (cf. James & Rose-Ackerman, 1986, p.51; Van der Meijden & Kornalijnslijper, 1995, p.19). This is indicated by factors such as whether the center is rooted in the welfare sector or whether the center has a pedagogical perspective. Quality and accessibility of care (the percentage of employer-financed and/or private places and prices) tend to be at odds with each other. High quality care will probably lead to higher prices, and accessible care implies modest prices, which in turn will have a downward pressure on quality. Centers that stem from a welfare background can be assumed to show more interest in accessibility of care, so prices and the percentage of employer-financed places can be assumed to be low. This can be achieved by increased efficiency and decreased quality. Centers working from a pedagogical view can be assumed to show more interest in day-care quality, which has an upward effect on efficiency, price, and the percentage of employer-financed places. Therefore:

H14a: *If the day-care center has its origin in the welfare sector, it will be more efficient, be of lower quality, have a lower percentage of employer-financed and/or private places, and have lower prices.*
H14b: *If the day-care center works from a pedagogical view, the higher its quality tends to be, the higher its efficiency, the higher the percentage of employer-financed and/or private places, and/or the higher prices.*

3.3.2.3 The level of the environment

There are several factors at the level of the environment that operate as a restriction as far as the decision-maker is concerned. For example, the composition of the town council and the kind of companies in the vicinity of the day-care center influence how many child places the decision-maker can hire out.

In the previous chapter we saw that there is monopolistic competition in the day-care market. Effects on a day-care center's supply can be expected from competition with other day-care centers, i.e. with other formal suppliers of day care and with informal suppliers of day care (Blau, 1989; Chipty, 1995, p.423). Monopolistic competition may put a limit on the latitude a day-care center has to compete on price.[62] This tends to force prices down (CQCO, 1995, p.13) and thus tends to lead to more efficiency (for example, Vickers & Yarrow, 1991). In turn, the center compensates for this loss of income by decreasing quality and/or increasing the percentage of employer-financed places. So, in the presence of competition, quality and prices will probably be lower, but the center will have relatively more employer-financed places.

H15: *More competition will lead to higher efficiency, lower quality, more employer-financed and/or private places, and lower prices.*

Day-care centers can demand higher prices if the income of parents is higher.[63] It is not so necessary for these day-care centers to produce efficiently. Therefore, we expect that the higher the parents income, the less efficiency there will be. High income parents are probably more willing (and able) to pay the prices associated with high quality care. So, income is expected to have a positive effect on quality. As was argued in Chapter 2, employers are probably more willing to arrange child care for their high-income employees. Therefore, it can be expected that the higher the average income of parents, the more employer-financed places there will be.

H16: *The higher the average income of parents, the less efficiency, the higher quality tends to be, the more employer-financed and/or private places, and the higher prices.*

Day-care centers that can rely on municipalities backing when they have financial shortages, i.e. those centers in areas where the town council has a relatively high proportion of left-wing and/or female councilors (see Hypothesis 2, Section 3.2.2), there is less pressure to produce efficiently. This can be compensated by charging higher prices, decreasing quality or increasing the percentage of employer-financed places. However, subsidies can be used to improve day-care quality and/or to lower the selling price of day care. This may offset the reverse effects of inefficiency on quality and price. Also, left-wing and female councilors can be assumed to attach greater importance to the accessibility of care, so the percentage of left-wing and the percentage of female councilors can be expected to have a positive effect on accessibility (less employer-financed places and lower prices). These effects may also offset the reverse effects (more employer-financed places and higher prices) caused by inefficiency. It is difficult to predict the net effect of these developments on quality, the percentage of employer-financed places, and prices.

[62] There may also be competition on quality, but given the fact that quality is difficult to measure, it can be expected that there will mainly be price competition.

[63] With respect to the effect of income on efficiency, quality, and accessibility only the direct effect is considered. Here, the indirect effect via the composition of Town Council is not taken into account.

H17a: *The higher the percentage of left-wing councilors in a municipality, the lower the day-care center's efficiency. Quality, the percentage of employer-financed and/or private places, and prices can either be lower or higher, the higher the percentage of left-wing councilors in a municipality.*

H17b: *The higher the percentage of female councilors in a municipality, the lower the day-care center's efficiency. Quality, the percentage of employer-financed and/or private places, and prices can either be lower or higher, the higher the percentage of female councilors in a municipality.*

Following up on Hypothesis 3 (Section 3.2.3), it can be expected that the larger the share of government agencies and educational institutions in the total employment rate of a municipality is, the more (employer-financed) places will be needed and supplied, and the fewer private places will be available. Assuming that employers stress a low price for the goods they purchase, we expect that the percentage of government agencies and educational institutions in the municipality will have a negative effect on price, and therefore on quality, but will have a positive effect on efficiency.

H18a: *The higher the percentage of government agencies in a municipality, the higher the day-care center's efficiency, the lower quality tends to be, the more employer-financed, the less private places, and the lower prices.*

H18b: *The higher the percentage of educational institutions in a municipality, the higher the day-care center's efficiency, the lower quality tends to be, the more employer-financed, the less private places, and the lower prices.*

The hypothesized effects of factors on the three levels on day-care supply are summarized in Table 3.2.

Table 3.2 Hypotheses with respect to differences in the supply of day care among day-care centers

		Dependent variables			
		Efficiency	**Quality**	**Percentage employer-financed or private**	**Price**
Independent variables					
Decision maker					
H6a	Quality norms sign. others [strong]	+	+	+	+
H6b	Equity norms sign. others [strong]	+	-	-	-
H7	Discretion [yes]	+	+	-	-
H8	Human capital [more]	+	+	-	-
Organization					
H9	Nonprofit [yes]	-	+	-	+
H10	Diversity in tasks [yes]	+	-	-	-
H11	National chain [yes]	-	-	+/-	+
H12a	Size [larger]	+	+	-	-
H12b	Number of hours open [more]	+	+	-	-
H13	Scope [yes]	+	+	-	-
H14a	Background welfare [yes]	+	-	-	-
H14b	Pedagogical view [yes]	+	+	+	+
Environment					
H15	Competition	+	-	+	-
H16	Parental income	-	+	+	+
H17a	Perc. of left-wing politicians in municipality	-	+/-	+/-	+/-
H17b	Perc. of female politicians in municipality	-	+/-	+/-	+/-
H18a	Perc. of educational institutions	+	-	+/-	-
H18b	Perc. of government agencies	+	-	+/-	-

(+: positive effect, -: negative effect; +/-: partially positive, partially negative effect)

3.4 Summary

In this chapter we have presented two theoretical models that try to explain day-care supply. First, in Section 3.2 a model was presented that was developed to explain (a) day-care supply by demand for day care from parents, government, and employers, and (b) how, over time, the Stimulative Measures changed the relative influence of demand for day care from parents, government, and employers on day-care supply (Research Question 1). Hypotheses have been formulated on the effect of demand for day care by parents, town councils, and employers on day-care supply. Demand for day care by parents is expected to be affected by monetary and time constraints as well as by norms. Number of children and parental income are monetary constraints. The fewer children and the more income parents have, the more day care will be demanded. Time constraints are the presence or absence of a partner and the distance to a day-care center. The absence of a partner and a shorter distance to a day-care center is expected to lead to more demand for day care. Furthermore, norms with respect to the use of a day-care center can be expected to affect the demand for day care. Parents who are faced with modern norms can be expected to demand more day care than parents faced with traditional norms. The increased involvement of employers in the day-care sector and the

decentralization of day-care policy to municipalities has meant that the roles of parents, town councils, and employers have changed. It is argued that town councils with relatively many left-wing and female councilors put more effort into acquiring the day-care subsidies that were part of the Stimulative Measures, and are thus probably more successful in increasing the municipality's level of day-care supply. The increased importance of town councils is, however, counteracted by the increased importance of employers, as employer-financed day care became more important under the Stimulative Measures. Demand by parents, as reflected by their income, can also be assumed to become more important as employers can be assumed to more willing to arrange day care for their higher-income employees than for lower-income employees.

Second, in Section 3.3 a model is presented that tries to explain differences in the supply among day-care centers (Research Question 2). This section focuses on differences in day-care supply in terms of efficiency, quality, the percentage employer-financed and/or private places, and prices. Increased commercialization and the further decentralization of day-care policy affect day-care supply after the falling off of the Stimulative Measures in 1996. The theory constructed in this section is at the level of the individual day-care center, because it is there that the relevant decisions about supply are made by day-care center decision-makers. The social production function approach is used for theory construction. The day-care center decision-maker is assumed to be a rational actor whose behavior can be explained from the confrontation of her goals and restrictions. The decision-makers goals are assumed to be stable, so differences in behavior have to be explained from differences in restriction. The restrictions that face the day-care center decision-maker can be found at three levels. At the decision-maker level norms with respect to quality and equity operate as restrictions. Also the amount of human capital the decision maker has is a restriction at this level. At the level of the organization, factors such as being for-profit, the size of the day-care center, and the number of years that a center has been in operation are all assumed to be important. Finally, at the level of the environment we point to the factors that were also identified in Section 3.2: demand by parents, municipalities, and employers.

From the restrictions at these three levels, hypotheses are derived as to the effects of the factors involved at the three levels on day-care supply, in terms of efficiency, quality, the percentage of employer-financed and/or private places, and price. Of special interest are the factors that indicate the presence or absence of competition and the profit factor. These variables give an indication of the effect of increased commercialization on day-care supply. It was argued that increased commercialization leads to increased efficiency, but to lower quality and decreased accessibility (relatively more employer-financed and/or private places and higher prices).

Chapter 4

Research design

4.1 Introduction

The previous chapters presented a description of the day-care market and explanations for differences in day-care supply. To be able to test the hypotheses derived from the theory, two data sets are used. A data set from SGBO[64] is used to analyze differences in the amount of day care that is supplied in municipalities. Municipal data have been collected from 1989 onwards. Added to supply data are demand data that have been collected on a yearly basis by Statistics Netherlands. The analysis of differences in the supply between day-care centers could not be done using existing data alone (Statistics Netherlands and SGBO). Therefore, additional data have been collected via a mail-survey carried out among Dutch day-care centers in 1997 with reference to the situation in 1996 (see Turksema (1999) for a detailed description of this data set). Section 4.2 describes the data collections used in this study. Section 4.3 presents the operationalization of the variables. Section 4.4 presents the empirical/statistical models that have been used to test the hypotheses derived in Chapter 3. Section 4.5 summarizes the chapter.

[64] We are grateful to Hugo Mutsaers of SGBO (research bureau of the Vereniging Nederlandse Gemeenten) for providing these data.

4.2 Data

4.2.1 Analysis of day-care supply in municipalities

To explain differences in day-care supply in municipalities, we use supply-side data from SGBO, that reflected the situation on 31 December each year (see Mutsaers, 1997). These data are aggregated at the level of municipality. We therefore know how much day care was supplied between 1989 and 1995 for each Dutch municipality. The Ministry of Health care, welfare, and sport wanted to monitor the effects the Stimulative Measures on Child Care had on day-care supply (see Chapter 1). In order to measure these effects a mail-survey was sent to the Dutch municipalities every year. As the supply of information was a condition for participating in the Stimulative Measures on Child Care, almost every municipality returned the questionnaire each year (see Appendix A, Table A1 and Mutsaers (1997) for a more detailed description of the data collection and response rates). Demand data come from Statistics Netherlands and reflects the situation on 1 January in the year under consideration (see Appendix A, Table A2). In the analyses only data for the years 1989, 1991, 1993, and 1995 will be used.

4.2.2 Analysis of differences in the supply among day-care centers

4.2.2.1 Procedure of data collection

Collecting data for the analysis of differences in supply between day-care centers involved three stages. During the first stage, two questionnaires were constructed on the basis of our theoretical model. One questionnaire was made for the location managers of day-care centers and one was made for the managers (directors) of the umbrella organizations. This was done because not all information was available at the level of the location manager (especially information with respect to the financial situation). These questionnaires were then sent to key informants (persons that were well informed about the day-care field). Their comments have been used to fill in the blanks and add useful elements to the questionnaire. During the second stage of the data collection, the adapted questionnaires were tested in a small pilot study. The pilot study was conducted in March 1997. Four directors and seven location managers were asked to participate. All directors and the four location managers were willing to participate in the pilot study. This phase of the research consisted of a visit to the directors and location managers during the course of which they filled out a questionnaire in the presence of the researcher. The remarks and suggestions, as far as they were useful, were used to construct the final questionnaires. Finally, during the actual survey, the revised questionnaire was sent to both location managers of day-care centers and to the directors of the umbrella organizations.

4.2.2.2 Sample/population

There was no list of individual day-care centers available, so addresses of day-care centers were collected from the phone book. In a small pilot study carried out in five representative Dutch municipalities we found that more day-care centers were listed in the phone book than the respective municipalities knew about. When compared to other methods, it can be said that collecting addresses from a phone book probably yields the best results. Via an automated search through the phone book, addresses were generated relatively easy. Addresses of all Dutch day-care centers have been collected using the CD-ROM version of the PTT phone book (edition June 1996). We used the computer program known as foongrep. Selection on the strings kinderdag*, kindercen*, kinderop* resulted in a raw address file that eventually yielded 1943 usable addresses. The addresses were also checked using the pink (company) section of the phone book. Day-care centers for handicapped children, medical day-care centers, guest parents offices, school-age child care, and play groups (Du: peuterspeelzalen) were not included. The following classification was derived from the address list of 1943 addresses generated.

- Umbrella organizations (N=96),
- Day-care centers belonging to an umbrella organization (N=659),
- Probably an independent day-care center or a day-care center belonging to an umbrella organization (location managers questionnaires, respondent is possibly director, but not of multiple day-care centers) (N=1054) and,
- Organizations of which could not be determined whether they were a day-care center or an umbrella organization (N=134).[65]

A total of 2077 questionnaires were sent to the organizations. The director questionnaires were sent to the organization categories 1 and 4 (230 questionnaires). The questionnaires for location managers were sent to organization categories 2,3, and 4 (1847 questionnaires).

4.2.2.3 Response

It turned out that not all of the addresses were of day-care centers and some day-care centers no longer existed. It appeared that 13.4% of day-care centre and 2.5% of the addresses of the umbrella organizations found referred to organizations that were no longer in existence. This reduced the "net" population to 1552 day-care centers and 159 directors (see Table 4.1). The initial response was very low, so it became necessary to send reminders. Table 4.1 shows the effects of the reminders on response. The first three reminders were sent within a couple of weeks after the questionnaire had been sent out to the centers and umbrella organizations.[66] It was necessary to send a fourth reminder, together with a new questionnaire and subsequently yet another fifth re-reminder.[67] Eventually, 469 of the location managers (30%) returned the questionnaire. The rate of response was somewhat lower for directors of umbrella organizations (26%).

[65] With regard to the last category: the description is usually `stichting kinderopvang' followed by the name of a municipality or region. This may imply that it is an umbrella organization, but it might also indicate a single day-care center.

[66] Reminder one on June 2, 1997, reminder two on June 24, 1997, and reminder three on Augustus 13, 1997.

[67] Reminder four on October 10, 1997. Reminder five on December first, 1997.

TABLE 4.1 RESPONSE TO MAIL SURVEY.

	Location Managers	Directors
Number approached	1792 (100%)	163 (100%)
Wrong addresses (percentage wrong)	240 (13.4%)	4 (2.5%)
Net number of addresses (percentage correct)	1552 (86.6%)	159 (97.5%)
Response per reminder (percentage of total response)		
Before reminder 1, number returned	114 (24.3%)	12 (29.3%)
Before reminder 2, number returned	86 (18.3%)	12 (29.3%)
Before reminder 3, number returned	70 (14.9%)	10 (24.4%)
Before reminder 4, number returned	45 (9.6%)	5 (12.2%)
Before reminder 5, number returned	130 (27.7%)	0 (0%)
After reminder 5, number returned	24 (5.1%)	1 (2.4%)
Total number of questionnaires returned	**469**	**41**
Percentage response (of the net number)	**30.2**	**25.8**

Table 4.2 shows the categorization of wrong addresses. Here, only the results for location managers are discussed, as the directors' response was too low to be of use in the analyses (N = 41). A large number of wrong addresses (35%) appeared to be of day-care centers that did belong to the target group, i.e. day-care centers for children with a handicap, medical day-care centers, guest parents offices, school-age child care, and play groups. The second largest group of wrong addresses (31%) was of day-care centers that were no longer located at the address referred to in the phone-book. No new address could be found for these centers which might mean they were no longer in business. A refusal by one center for several centers was the third largest category of wrong addresses (28%). These were refusals by small organizations with two or three day-care centers, that were in fact one organization, because they have the same manager.[68]

TABLE 4.2 NON-RESPONSE TO MAIL SURVEY: WRONG ADDRESSES.

	Location Managers	Directors
Wrong addresses	240 (100%)	4 (100%)
Center not belonging to target group	83 (35%)	2 (50%)
Center no longer on current address	75 (31%)	-
One refusal for several centers	66 (28%)	1 (25%)
Double address	11 (4%)	-
Bankrupt/liquidated/merged	5 (2%)	1 (25%)

[68] The refusal by the main organization is counted as a \real" refusal. The \refusals" of the other centers that are part of this organization cannot be counted as a refusal, as the actual decision-maker already has refused to participate. Therefore these additional centers are included in the wrong address part of the table, and not in the part with the refusals.

Table 4.3 shows the refusals and number of non-responses. The number of refusals was 397 (26% of the net number of centers). Most refusals are from day-care centers themselves (69%). The remaining refusals came from three large umbrella organizations, whose location managers were not allowed to participate in the research. There was no response, even after five reminders, for 686 centers (44% of the net number of centers).

Compared to other surveys, the response rate of 30% was not very high. Therefore, it was necessary to carry out an analysis of the representativeness of the response. Tables 4.4-4.6 compare the centers in our data set with the population of centers, as derived from the phone book. It should be noted that a small number of day-care centers (41) remained anonymous. It was therefore not possible to classify them in terms of the size of the municipality and the province in which they are located (Tables 4.4 and 4.5). To be consistent with Tables 4.4 and 4.5, Table 4.6 also reports on 428 cases. Table 4.4 shows that, when the size of the municipality is examined there is no great difference in the distribution of day-care centers among municipalities as far as the response and the population is concerned. There appears to be a very small overrepresentation of day-care centers in municipalities with less than 50,000 inhabitants, whereas the day-care centers in the larger municipalities (more than 50,000 inhabitants) are slightly, although not significantly, underrepresented.

TABLE 4.3 NON-RESPONSE TO MAIL SURVEY: REFUSALS AND NO RESPONSE.

	Location Managers	Directors
Refusals per reminder (percentage of net number)		
General refusals	274 (17.7%)	20 (10.7%)
Refusals by three national chains	99 (6.4%)	3 (1.9%)
Total number of refusals	397	20
Percentage refusal (percentage of net number)	25.6	12.6
No response	686	98
Percentage no response (percentage of net number)	44.2	61.6
Total non-response	69.8	74.2

TABLE 4.4 RESPONSE ANALYSIS LOCATION MANAGERS: BY SIZE OF MUNICIPALITY.

Size of municipality ***(number of inhabitants)***	***Sample***	***All centers 1996***
< 5,000	4 (0.9%)	16 (1.0%)
5,000 – 9,999	28 (6.5%)	96 (6.0%)
10,000 – 19,999	80 (18.7%)	243 (15.1%)
20,000 – 49,999	94 (22.0%)	337 (20.9%)
50,000 – 99,999	53 (12.4%)	235 (14.6%)
100,000 – 230,000	86 (20.1%)	339 (21.1%)
Large four municipalities	83 (19.4%)	343 (21.3%)
Subtotal	428 (100%)	1609 (100%)
Unknown location of day-care center	41	
Total	469	

Source: Sample – own data collection, all centers – phone-book PTT [χ^2=5.04, not significant].

Table 4.5 evaluates the selectivity of the response by looking at the provinces. Again, there are only small, non-significant differences in the distribution of centers among provinces between the data set and the population of day-care centers.

TABLE 4.5 RESPONSE ANALYSIS LOCATION MANAGERS: BY PROVINCE.

Province	**Sample**	**All centers 1996**
Groningen	14 (3.3%)	51 (3.2%)
Flevoland	13 (3.0%)	36 (2.2%)
Drente	7 (1.6%)	27 (1.7%)
Overijssel	20 (4.7%)	95 (5.9%)
Friesland	13 (3.0%)	37 (2.3%)
Gelderland	44 (10.3%)	175 (10.9%)
Utrecht	41 (9.6%)	125 (7.8%)
Noord-Holland	81 (18.9%)	322 (20.0%)
Zuid-Holland	104 (24.3%)	421 (26.2%)
Zeeland	5 (1.2%)	33 (2.1%)
Noord-Brabant	53 (12.4%)	188 (11.7%)
Limburg	33 (7.7%)	99 (6.2%)
Subtotal	428 (100%)	1609 (100%)
Unknown location of day-care center	41	
Total	469	

Source: Sample – own data collection, all centers – phone-book PTT [χ^2=7.5, not significant].

Finally, Table 4.6 compares the response with the population of centers by looking at the type of organization (independent centers, centers part of umbrella organization with only child care, and

centers that are part of an umbrella organization with activities other than child care). In the sample there is an overrepresentation of day-care centers belonging to an umbrella organization with multiple activities, whereas centers belonging to an umbrella organization whose only activity is day care are underrepresented. This may be caused by the relatively large number of refusals by the three national chains (compare Table 4.3), which are mainly centers belonging to an umbrella organization whose only activity is day care. Another explanation may be that much of the information that was asked for in the questionnaire is only available at the main office and that these main offices found it too much effort to provide the information. However, this contradicts the finding that centers that belong to an umbrella organization with multiple activities are over-represented. It may be that the managers of these centers have more discretion than the managers of centers belonging to an umbrella organization whose only activity is day care. The under-representation of independent centers might be caused by the greater work pressure in these centers.

TABLE 4.6 RESPONSE ANALYSIS LOCATION MANAGERS: BY TYPE OF ORGANIZATION.

Type of organization	Sample		All centers 1996	
Independent	188	(40%)	771	(48%)
Multiple centers	133	(28%)	663	(42%)
Multiple activities	138	(29%)	162	(10%)
Subtotal	428	(100%)	1614	(100%)
Unknown location of day-care center	41			
Total	469			

Source: AKN96 – own data collection, all centers – phone-book PTT [χ^2=115.5, p<0.001].

4.3 Operationalizations

This study focuses on two phenomena: (1) day-care supply in municipalities and (2) differences in supply among day-care centers. Section 4.3.1 presents the operationalizations of the dependent variables, and the variables that are thought to affect them. All variables are measured at the level of the municipality. Data sources are reported in Appendix A (Table A2). Section 4.3.2 describes the operationalization of day-care efficiency, quality, the percentage of employer-financed and private places, price, and the measurements of the variables needed to explain differences in supply among day-care centers.

4.3.1 Analysis of day-care supply in municipalities

Day-care supply in municipalities is operationalized as day-care density, the number of full-time places in day-care centers per 1,000 children up to four years in a municipality (also see Van Dijk et al., 1993). Day-care density is a relative measure of municipal day-care supply, which allows us to compare day-care supply between municipalities.

In Chapter 3 it was put forward that demand for day care by parents is expected to be affected by monetary and time constraints, by norms, and the availability of alternative day-care modes. The monetary constraints identified are the number of children under the age of four per family and parental income. Data on the number of children under the age of four per family was not readily available from Statistics Netherlands. Therefore, it was calculated by dividing the total number of children under the age of four by the number of families in a municipality. This is the closest approximation of the number of children under the age of four per family. Parental income is operationalized as the average per capita income. Time constraints are whether there was a partner present and the distance a parent had to travel to a day-care center. The presence of a partner is operationalized by the percentage of households in a municipality that consists of one-parent families. The distance to a center can be expected to be less in more densely populated areas. It can therefore be expected that more day care will be demanded in densely populated areas. Therefore, the distance to a day-care center is operationalized by the population density of the municipality (number of people per km2). It is difficult to measure the norms faced by parents with respect to the use of day-care center. Therefore, the level of education of the inhabitants of the municipality was taken as a proxy of these norms. More highly educated persons can be expected to have more modern norms as far as the use of day-care centers is concerned (see Van Dijk, 1994 for a review of the literature on this matter). The availability of informal supply is operationalized as one divided by the number of pre-school aged children (children aged up to four years). In larger municipalities, i.e. municipalities with many children, there is less informal supply available (Emancipatieraad, 1997). One divided by the number of children aged up to four years will therefore be used as the operationalization of the amount of informal supply.

The percentage of left-wing councilors is operationalized as the percentage of councilors that comes from PvdA, D'66, Groen Links, or local left-wing parties. The percentage of female councilors is the percentage of all councilors that is female. Employment structure could not be measured by the percentage of jobs in government agencies and educational institutions, because there are no longitudinal data available with respect to these jobs. Therefore, employment structure is operationalized as the percentage of jobs in non-commercial services, which is the closest approximation to the intended variables and is available for each year.

Mean values and standard deviations of the variables used in the analyses are presented in Table 4.7.

Table 4.7 shows that there is a considerable increase in the density of day-care between 1989 and 1995. In this period, day-care density increased by 37 places per 1000 children, an increase of more than 450%. The table shows that the increase in day-care density was largest between 1989 and 1991 (173%). After 1991, the growth rate diminishes from 79% (1991-1993) to 14% (1993-1995). The table also shows that most of the values of the explanatory variables are fairly stable over time. Notable are the changes in the percentage of one-parent families and mean income per capita. The changes in income reflect partially inflation. Within-year differences in income between municipalities do not differ much between the years.

TABLE 4.7 MEANS AND STANDARD DEVIATIONS OF THE VARIABLES USED IN THE ANALYSES TO EXPLAIN DAY-CARE SUPPLY IN MUNICIPALITIES, 1989-1995.

Variables	1989	1991	1993	1995
Day-care density	8.16 (15.6)	22.24 (24.6)	39.77 (32.4)	45.33 (36.9)
Growth compared to t-2	-	173%	79%	14%
Demand by parents				
Number of children per household	-	-	-	0.373 (0.04)
Mean income per capita per year (*10-3)	12.55 (1.1)	14.10 (1.4)	19.09 (1.6)	19.05 (1.6)
One-parent families as percentage of all households	4.50 (0.8)	8.10 (2.4)	8.01 (2.4)	7.78 (2.3)
Average distance to a day-care center	0.64 (0.9)	0.65 (0.8)	0.66 (0.9)	0.67 (0.9)
Norms	-	-	-	14.89 (8.8)
Informal supply	1.16 (2.2)	1.23 (2.3)	1.27 (2.4)	1.29 (2.5)
Composition of town council				
Percentage of left-wing councilors	28.70 (15.3)	28.94 (15.2)	28.16 (15.1)	28.28 (14.9)
Percentage of female councilors	18.37 (9.7)	20.56 (10.3)	21.50 (10.2)	21.41 (10.0)
Employment structure				
Percentage of non-commercial services	29.28 (11.6)	28.53 (11.8)	26.38 (11.5)	24.53 (12.7)
N	603	578	561	524

Source: day-care density from SGBO; all other data from Statistics Netherlands.

4.3.2 Analysis of differences in the supply among day-care centers

4.3.2.1 Dependent variables

Efficiency

(Technical) Efficiency is, in general, defined as the ratio of outputs to inputs. In terms of Figure 2.1, a firm is technically inefficient when it is not operating on the potential, but on the perceived frontier. The maximum amount of outputs can only be produced on the potential frontier. So, firms operating on the perceived frontier produce less output when compared to what is technically possible. This makes them technically inefficient. Ideally, in order to calculate technical efficiency in this study, cost price should be used. However, the cost price of day care is not available. Due to unclear financial organization, many day-care centers do not know the cost price of day care (Moret Ernst & Young,

1996). So, efficiency is operationalized as the selling price of a place in a day-care center, controlled for quality (staff/child ratio, see below for the operationalization). In this perception, a day-care center is more efficient if it produces the same quality for a lower price, or if it produces more quality for the same price (also see CQCO, 1995, p.6). Although the selling price is different from the cost price, selling price has become increasingly closer to cost price. The Ministry of VWS (1997, p.26) has made estimates of cost price for 1989 and 1995 by dividing the total costs by the number of places. In 1989, the selling price was NLG 1,700 (12%) less than the estimated cost price, whereas in 1996 the selling price was NLG 90 (0.5%) more than the estimated cost price. This gives an indication that possibly, on average, the selling price is a good reflection of cost price.

The degree of capacity utilization is used as a second measure of efficiency. Centers that are better able to fill the open places are assumed to be more efficient (also see MDW, 1998, p.29; Statistics Netherlands, 1999a, p.7).

Quality

Quality of day care can be classified in two ways: structural and process quality (see, for example, CQCO, 1995; Goossens, 1995: Hayes et al., 1990). Structural quality refers to the inputs into child care. Measures of structural quality are, for example, the staff/child ratio, group size and care-giver education (see, for example, Blau, 1998, p.107). Process, or interactive, quality[69] refers to the general environment and social interactions in the classroom (Britner & Phillips, 1995; CQCO, 1995, p.22). According to the developmental experts, developmentally appropriate child care `includes an integration of good nurturing care that protects children's health and safety; developmentally appropriate activities for children; the interaction of trained staff with children to promote their emotional security, development and learning; a physical environment that provides adequate stimulation and opportunities for a wide variety of developmental and learning activities; and the involvement with the child's family through clear and routine communication' (CQCO, 1995, p.22). This list illustrates the fact that process quality cannot easily be regulated. However, research findings show that structural quality, which can be regulated by government, positively affects process quality as well as child development (for example Blau, 1997, 1998; Blau & Hagy, 1998; CQCO, 1995; Hayes et al., 1990; Mocan, 1997).[70] Process quality is primarily affected by the staff/child ratio (CQCO, 1995), but it is also influenced by staff member education and administrator's experience, although to a smaller extent (CQCO, 1995, p.35). Therefore, in this study, child-care quality is firstly operationalized as the staff/child ratio (staff in full time equivalents).

The mean level of education of the staff members was used as a second measure of quality. In the questionnaire, the respondents were also asked to fill out the number of staff members that had had

[69] Process quality, in turn, affects children's (social, cognitive, and language) developmental outcomes (CQCO, 1995; Goossens, 1995; Helburn & Howes, 1996; Hayes et al, 1990). `Child outcomes refer to measures of cognitive and socio-emotional functioning of the children, outcomes which over the longer term would be expected to relate to children's success in school. These include measures of children's language abilities, pre-academic skills, attitudes towards child care and perceptions of their competence, relationships with their teachers, and social skills' (CQCO, 1995, p.22).

[70] It should be noted that some of these studies have shortcomings: they often do not control for developmental inputs received by the children at home, as well as other socio-economic factors that may affect child development and may be correlated with the quality of care (Blau, 1997; Council of Economic Advisers, 1997).

education at one of three levels. From this the mean level of education of day-care center staff members was calculated.

We also measured quality in a third way, namely by asking the location manager the extent to which a certain number of quality aspects could be realized. The quality aspects that were included in the questionnaire were: a. continuity in teacher-child relation, b. varied activities, c. stability of child group, d. balanced placing policy, e. stimulative playing material, f. signaling developmental disorders. The scores per aspect range from 0 (not at all) to 5 (to a high degree). Figure 4.1 shows how day-care centers score on the quality aspects. The average score for the various aspects lies between three (to a satisfactory degree) and four (to a high degree). It is clear that location managers have the most difficulty when it comes to realizing a balanced placing policy and in signaling developmental disorders. The three aspects that they claim can best be realized are continuity in the teacher-child relationship, offering a varied set of activities, and offering stimulating playing material.

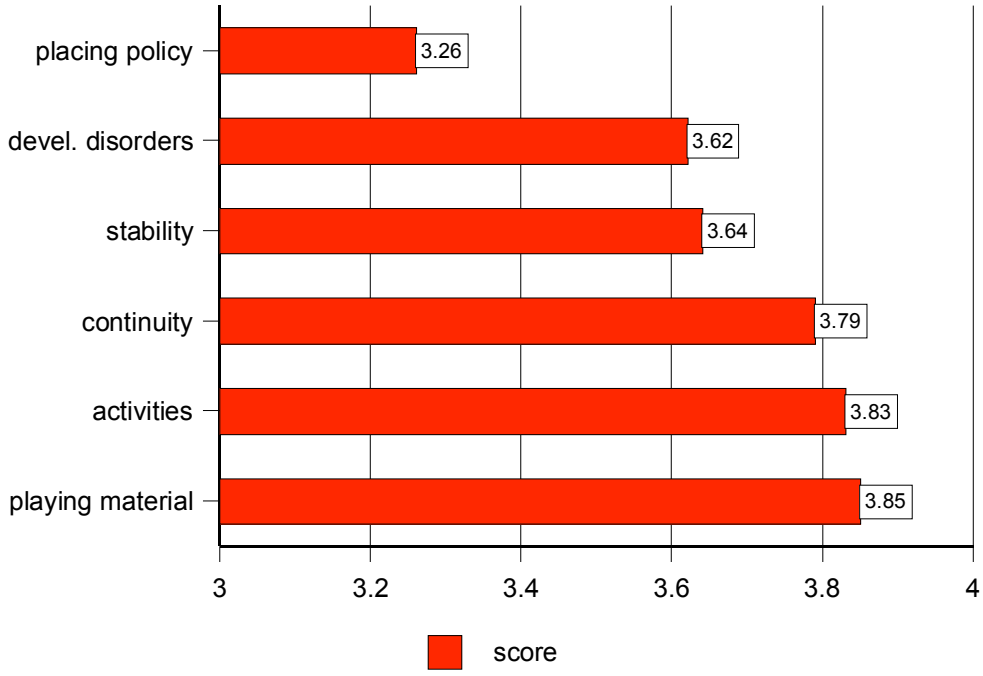


FIGURE 4.1. MEAN SCORES ON A NUMBER OF QUALITY ASPECTS (SCALE RANGES FROM 1-5).

Mokken scale analysis (Mokken, 1971) was used to see whether the quality items form a cumulative scale. Mokken scale analysis tests whether a set of items is hierarchical and cumulative, and determines the degree to which a scale is unidimensional and cumulative. Unidimensionality means that the items in a scale should measure the same underlying trait. Cumulativity refers to the rank order with respect to difficulty[71] (the relative proportion of positive answers) (Molenaar et al., 1994). Mokken scale analysis gives H-values for the scale as a whole, and H(i) coefficients for the separate items. The H-value indicates the strength of the scale as a whole. H(i) coefficients indicate the degree

[71] This means that `for certain items a larger amount of the latent trait is required than for others to produce a positive response' (Debets & Brouwer, 1989, p.4).

to which the rank order with respect to difficulty is the same for every respondent. H(i) coefficients below 0.3 are not considered to be part of the scale that measures the latent trait. Table 4.8 presents the results of the Mokken scale analysis for the quality items.

Table 4.8 shows that all items are scalable. The Mokken H value of the quality scale is 0.40 (z(H) 28.8, mean=22.0, sd=3.35, rho=0.77), a medium scale. The reliability coefficient rho (0.77) indicates that the internal homogeneity of the scale is high. Taken together the scores on the items give the score on quality. The higher the aggregated score on these items, the higher quality.[72]

TABLE 4.8 MOKKEN SCALE ANALYSIS FOR 6 QUALITY ITEMS (N=469).

Variables	Mean	H(i)	z(H)
Stimulative playing material	3.85	0.43	17.95
Varied activities	3.84	0.43	18.11
Continuity in teacher-child relation	3.79	0.34	14.55
Stability of child group	3.65	0.42	17.50
Signaling developmental disorders	3.62	0.38	15.77
Balanced placing policy	3.26	0.42	16.31

Source: own data collection.

Percentage of employer-financed and percentage of private places

The operationalization of these two concepts is straightforward. The percentage of employer-financed is operationalized as the percentage of places in a day-care center that is financed by employers. The percentage of private places is operationalized as the percentage of places in a day-care center that is privately financed by parents.

Price

The price of day care is operationalized as the average selling price of the three types of day-care places (subsidized, employer-financed, and private).

4.3.2.2 Explanatory variables

In this section the explanatory variables are operationalized. The transition from welfare to market in day-care (Research Question 2) is reflected by the factors profit and competition. Nonprofit versus for-profit and more or less competition are used because they are static concepts that are comparable to (the dynamic process of) the transition from welfare to market.

[72] For the same set of variables, also factor analysis was performed. This resulted in a one factor solution with all six variables. This strengthens the confidence in the result of the Mokken scale analysis.

Level of the decision-maker

To measure the norms of significant others with respect to quality and equity we first have to distinguish the significant others. Significant others of the day-care center decision-maker are: parents of children in the day-care center, employers (hirers of employer-financed day-care places), the municipal council (hirers of subsidized places), staff members within the day-care center, and the management of the day-care center's umbrella organization. We asked the decision-makers to score the degree to which the significant others, in their opinion, would agree to two propositions. Due to the length of the questionnaire we could not include many propositions about norms related to quality and equity, which would have been preferable. The first proposition was with respect to quality and reads:

> "Flexibilization on the labor market makes flexibilization of day care necessary."

We did not ask directly for quality as we expected socially desirable answers. Therefore we formulated the proposition using flexibilization which is thought to be negatively correlated with quality as defined by child developmental experts (see, for example, Goossens, 1992; Helburn et al., 1995).[73] More flexibility is assumed to lead to lower quality. The other proposition was with respect to equity, and reads:

> "Day care is especially meant to enable parents to perform paid work, the educational function comes in second place. "

Both scales, consisting of the score on both propositions for the significant others, form an internally consistent scale (Cronbachs alpha of the norms with respect to quality scale equals 0.76, Cronbachs alpha of the norms with respect to equity is equal to 0.83). We scored the overall norms with respect to quality and equity (one score for each) as the sum of the respective scores of the significant others (also see, for example, Van der Lippe, 1993).[74] The scores for quality have been recoded first. The scores of the significant others on the propositions are given in Table 4.9. The table shows that, according to the day-care center decision-makers, staff members have stronger norms with respect to quality compared to the other significant others. According to the decision-maker, employers have the strongest equity norms. It seems somewhat odd that employers have the strongest norms with respect to equity. This is probably a result of how the proposition was formulated.

[73] Also see the operationalization of quality as a dependent variable.

[74] However, the norms of the significant others do not necessarily coincide. One can imagine that staff members within day-care centers have different norms with respect to quality than employers who hire day-care places for their employees.

TABLE 4.9 NORMS OF THE SIGNIFICANT OTHERS WITH RESPECT TO QUALITY AND EQUITY (N=253).

Aspect	**Quality** Mean (sd)	**Equity** Mean (sd)
Parents	1.64 (0.67)	2.67 (1.11)
Employers	1.61 (0.75)	3.49 (1.07)
Town Council	2.22 (0.79)	3.15 (0.97)
Staff members	2.86 (1.00)	1.97 (0.92)
Board of center(‘s umbrealla organization)	2.00 (0.83)	2.47 (1.11)

Discretion refers to the degree to which location managers can make their own choices with respect to managing the day-care center. Discretion is measured by asking at which level (center, umbrella organization, or higher level) decisions are made with respect to price, number of places, percentage of employer-financed places, pedagogical policy, and placing policy. The more decision-making with respect to these aspects is delegated to the location manager, the more discretion. The managers of independent centers have full discretion, as they do not have an umbrella organization. The amount of human capital the decision-maker has, is measured by the highest level of education attained by the decision maker and the number of years of experience she has had in her current job (experience in other jobs might be less relevant in this case).

Level of the organization

The profit variable was constructed using the legal form of the organization. For-profit are the centers who are constituted according to the legal conditions required of a limited company (Ltd.) and centers that indicated that in legal structure they are a `one-man business'. The other centers (institutions and associations) are non-profits organizations. Diversity in tasks refers to the variety of the umbrella organizations tasks in relation to day-care center. Independent centers and centers that are part of an umbrella organization where the only activity is day care do not have diversity in tasks. Therefore a center is said to have diversity in tasks if it has an umbrella organization that has other activities besides day care. The operationalization of national chain is straightforward. In the questionnaire we asked whether the day-care center is part of one of the three national day-care chains. The scale of the organization is measured by the number of child places the center has and the number of hours per day that the center is open. An organization may have economies of scope if the day-care center has multiple products, like services for infant-toddlers, preschoolers, and kindergarten-school age children. This variable was constructed by asking which products the centers offer to their clients. Centers that only offer one product have a zero score on this dummy variable while centers with multiple products have a score of one. We asked whether the center is rooted in the welfare sector. Whether the center works from a pedagogical view is established by asking whether the center work according to the following pedagogical ideas: Montessori, Dalton, Jena plan, Freinet.

Level of the environment

The variables at this level include some of the independent variables that were used to explain day-care presence and density, i.e. average per capita income, the composition of the town council, and the municipality's employment structure.

The operationalization of employment structure has changed when compared to Section 4.3.1. More detailed data were available for 1996, so those data were used. Employment structure is now operationalized by two separate variables: the percentage of educational institutions and the percentage of government agencies in local employment. Added to these variables are the competition variables. These indicate whether there is competition on the local market. Competition by formal suppliers (day-care centers) is measured by a dummy variable indicating whether or not there is more than one day-care company in the municipality.[75] Competition by informal suppliers is, analogous to the operationalization in Section 4.3.1, operationalized as one divided by the number of pre-school aged children (children aged up to four years). Thus, the variable indicates the degree of competition rather than whether or not there is competition by informal suppliers.

Mean values and standard deviations of the variables used in the analyses are given in Table 4.10. The table only reports on the centers where an observation was available for each variable. The response was quite low for a number of variables. This reduced the number of observations that can be used in the analyses to 253.

Efficiency in Dutch day-care centers is measured in two ways: price divided by the staff/child ratio and the degree of capacity utilization. The mean value and standard deviation of the first measure in itself are not very informative. What is noteworthy, however, is that there is very little variation in this efficiency measure (coefficient of variation is equal to 0.37, for the analyses this means that it is more difficult to find significant effects). The degree of capacity utilization equals 0.85. There is more variation in this efficiency variable. The average staff/child ratio, our first indicator of quality, equals 0.176. This means that there is about 1 staff member to 5.7 children. The required staff/child ratio in the Netherlands ranges from 1 staff member to 4 children for children aged up to 1.5 years to 1 staff member per 9 children in the 3-4 year old category. So, the average staff/child ratio seems to be above the required ratio. Here too, there is very little variation (coefficient of variation equal to 0.28). About 52% of the places in day-care centers are employer-financed, whereas 21% of the places are private (the remaining 27% of the places are subsidized). The average selling price of a place is NLG 1445 per month.

[75] A day-care company can have one or more day-care centers in a municipality.

TABLE 4.10 MEANS AND STANDARD DEVIATIONS OF VARIABLES USED IN THE ANALYSES TO EXPLAIN DIFFERENCES IN SUPPLY AMONG CENTERS (N=253 centers).

Variables	Mean	Standard deviation
DEPENDENT VARIABLES		
Efficiency		
Price divided by staff/child ratio	8.589	2.86
Degree of capacity utilization	0.865	0.10
Quality		
Staff/child ratio	0.177	0.05
Mean education of staff members	2.09	0.23
Score on quality scale	22.01	3.23
Equity		
Percentage of employer-financed places	50.24	28.41
Percentage of private places	23.47	32.67
Price (per month)	1437.8	115.6
INDEPENDENT VARIABLES		
Decision maker		
Norms with respect to quality (standardized)	0.00	0.65
Norms with respect to equity (standardized)	-0.00	0.79
Discretion	9.47	4.07
Mean level of education	7.09	1.21
Number of years experience	5.60	3.05
Sexe (female)	0.94	0.24
Age	38.5	7.2
Organization		
Profit (yes)	0.200	0.40
Diversity in tasks (yes)	0.300	0.46
National chain (yes)	0.080	0.27
Size 1 (0-20 places)	0.249	0.43
Size 2 (21-40 places)	0.374	0.48
Size 3 (41-60 places)	0.256	0.44
Size 4 (>60 places)	0.121	0.33
Number of hours open per day	10.16	1.20
Scope (yes)	0.46	0.50
Number of years in operation	8.73	8.96
Pedagogical view (yes)	0.58	0.49
Environment		
Competition by formal suppliers	0.70	0.46
Competition by informal suppliers	7.27	9.88
Mean income per capita per year ($*10^{-3}$)	19.26	1.18
Percentage of left-wing councilors	39.62	14.98
Percentage of female councilors	25.78	7.77
Percentage of educational institutions	6.63	2.94
Percentage of government agencies	6.52	4.60

Source: own data collection (supply data) and Statistics Netherlands (data on environment).

4.4 Statistical Models

4.4.1 Analysis of day-care supply in municipalities

The panel character of the data allowed us to analyze differences in day-care supply in municipalities, and changes in the effect of the explanatory variables on municipal day-care supply. Between 1989 and 1995 the boundaries of many municipalities have been redrawn. To be able to compare the municipalities longitudinally, it was necessary to recalculate the values of the variables for those municipalities whose boundaries had changed. As the smallest number of municipalities was recorded for 1995, this year was taken as the reference year. The scores for all municipalities in 1989, 1991, and 1993 were calculated as if they were a 1995 municipality.[76]

To test our empirical model we used panel regression. The data we use can be seen as repeated measures on the same subjects. Here we deal with measurements of day-care density in a certain year that are nested in municipalities. Day-care density in a municipality in a particular year can be expected to be determined by the municipality's day-care density in the year before, i.e. there might be contemporaneous correlation. Ignoring the hierarchical structure of repeated measures data would lead to an underestimation of the standard errors of the regression coefficients, as the residuals are not independent. In that case hypotheses would be accepted wrongly (Kennedy, 1992). Panel regression incorporates the hierarchical structure of the data, and furthermore it uses consistent estimators of the standard errors.

4.4.2 Analysis of differences in the supply among day-care centers

Day-care efficiency, quality, price, the percentage of employer-financed and the percentage of private places are interrelated, as we have seen in Chapter 3. This means that changes with respect to any of these five leads to changes in one or more of the other dimensions, i.e. there are trade-offs. This endogeneity implies that the error terms of the equations for efficiency, quality, price, and the percentage of employer-financed and private places are correlated. This should be taken into account when analyzing differences in supply among day-care centers. Seemingly unrelated regression analysis takes this into account. However, we can still use OLS regression, because we use the same set of explanatory variables in each equation, which yields the same results as seemingly unrelated regression analysis (Kennedy, 1992). Moreover, there are several day-care centers clustered within one municipality. This means that observations may not be independent within groups (Stata, 1999, `cluster'). In our regression analyses we correct for this clustering by using robust estimators of standard errors (Stata, 1999, `robust').

[76] See De Graaf and Kalmijn (1998) for a comparable application.

4.5 Summary

This chapter presented the data for the analyses of day-care supply in municipalities and the analyses of differences in supply among day-care centers. Two data sets that are used to test the hypotheses derived from the theory are described. First, a data set from SGBO (day-care supply per municipality) is combined with data on the demand for day care (Statistics Netherlands). These data have been collected for the period 1989 - 1995. Second, the chapter describes the data collection for the analysis of differences in the supply among day-care centers. These data were collected via a mail-survey among Dutch day-care centers. A net number of 1552 day-care centers were approached. Thirty percent of the day-care centers (469 location managers) returned the questionnaire. Also 159 directors of day-care umbrella organizations were approached. Only 41 of the directors cooperated (26%). This number was too low to include them in the analyses as well. The operationalizations of the variables was presented in Section 4.3. Finally, Section 4.4 presented the statistical models that are used to test the hypotheses derived in Chapter 3.

Chapter 5

Descriptive analyses

5.1 Introduction

This chapter provides the descriptive analyses of the data. Bivariate analyses are presented for the analyses of day-care supply in municipalities (day-care density) and differences in the supply among day-care centers. The results of the multivariate analyses are presented in Chapter 6. In Section 5.2 the descriptive analyses are presented for the analysis of day-care supply in municipalities. This section describes the bivariate relationship between day-care supply in municipalities (and growth in day-care supply in municipalities) and several factors related to demand for day care. Section 5.3 provides some additional characteristics of the day-care center. Descriptive analyses of differences in supply among day-care centers are presented in Section 5.4. The chapter is summarized in Section 5.5.

5.2 Analysis of day-care supply in municipalities

Table 5.1 shows that there are large differences in day-care density and day-care density growth between provinces. In the western part of the country (which includes the so-called Randstad) day-

care supply is higher than in the other regions.[77] This part of the country is characterized by relatively large numbers of children under the age of four, higher population density, higher income levels, and high levels of employment in the commercial service sector than in the rest of the country. Day-care density is much lower in regions outside the Randstad. Day-care density is about twice as high in the western provinces as it is in the northern provinces of Groningen, Friesland, and Drente.

TABLE 5.1 DAY-CARE SUPPLY IN MUNICIPALITIES (DAY-CARE DENSITY) BY PROVINCE, 1989-1995.

Province	**1989**	**1991**	**1993**	**1995**	**Δ1989-1995**	
Groningen	11.4	21.6	26.1	36.9	25.5	(224%)
Friesland	3.3	8.5	20.7	29.1	25.8	(782%)
Drente	1.7	17.1	42.0	33.4	31.7	(1865%)
North	*4.9*	*15.3*	*30.5*	*32.8*	*27.9*	*(569%)*
Overijssel	6.5	16.1	40.5	45.4	38.9	(598%)
Flevoland	16.8	25.5	43.0	52.7	35.9	(214%)
Gelderland	6.5	20.4	40.0	43.4	36.9	(568%)
East	*6.9*	*19.3*	*40.3*	*44.5*	*37.6*	*(545%)*
Utrecht	12.9	32.5	51.2	67.1	54.2	(420%)
Noord-Holland	12.4	35.0	55.0	67.8	55.4	(447%)
Zuid-Holland	12.4	29.6	47.3	53.3	40.9	(330%)
West	*12.5*	*32.1*	*50.6*	*60.5*	*48.0*	*(384%)*
Zeeland	9.8	16.4	22.8	28.7	28.9	(193%)
Noord-Brabant`	5.6	18.0	30.2	34.0	28.4	(507%)
Limburg	5.3	19.9	43.2	48.5	43.2	(815%)
South	*6.1*	*18.3*	*33.1*	*37.5*	*31.4*	*(515%)*
Netherlands	8.2	22.2	39.8	45.3	37.1	(452%)
N	603	578	561	524		

Source: SGBO (own calculations).

Between 1989 and 1995 day-care density grew, on average, by 37.1 places per 1000 children (452%). The absolute growth in day-care density is largest in the western provinces, and smallest in the northern provinces. During the period when the Stimulative Measures were in force the difference in day-care density between the western provinces and the rest of the Netherlands increased. Relative growth (a measure that gives odd results given the low values of day-care density in 1989) is largest in the rural province of Drente, where, for a long time, there was only one day-care center.

When we examine municipality size (Table 5.2), we see that, each year, day-care density is positively related to the number of inhabitants. The absolute increase in day-care density was largest in municipalities with 100,000-230,000 inhabitants.

[77] In 1989 day-care density was highest in the province of Flevoland. This province consists of five municipalities, with two large cities. The finding that this province has the highest day-care density is due to the composition of municipalities (relatively many large cities), rather than other factors.

TABLE 5.2 DAY-CARE SUPPLY IN MUNICIPALITIES (DAY-CARE DENSITY) BY SIZE OF MUNICIPALITY, 1989-1995.

Size of municipality (number of inhabitants)	1989	1991	1993	1995	Δ1989-1995	
< 5,000	3.9	7.0	17.7	20.4	16.5	(423%)
5,000 – 9,999	3.3	13.5	28.3	36.5	33.2	(1006%)
10,000 – 19,999	3.7	20.8	37.3	42.1	21.3	(1038%)
20,000 – 49,999	12.8	27.9	47.2	52.7	24.8	(312%)
50,000 – 99,999	24.7	45.5	74.2	74.9	29.4	(203%)
100,000 – 230,000	36.8	57.1	91.5	106.2	49.1	(189%)
Large four municipalities	78.0	104.2	154.5	137.2	33.0	(76%)
Netherlands	8.2	22.2	39.8	45.3	37.1	(452%)
N	603	578	561	524		

Source: SGBO (own calculations).

In the Tables 5.3 to 5.5 we break down day-care density and day-care density growth according to three factors that reflect the demand for day care (by parents, municipalities, and employers). To be able to compare the four years under consideration, parental income, composition of town council, and the employment structure of the municipality were divided into quartiles.

Table 5.3 shows that, in every year, day-care density is higher when parental income is higher. In 1989, day-care density in the fourth quartile is about seven times larger than density in the first quartile. This difference is much smaller in the years after 1989. However, in 1995 day-care density is still about twice as high in municipalities belonging to the fourth income quartile than in municipalities in the first income quartile. Moreover, the table shows that absolute increase in density is larger in municipalities where parental income is higher.

TABLE 5.3 DAY-CARE SUPPLY IN MUNICIPALITIES (DAY-CARE DENSITY) BY PARENTAL INCOME IN MUNICIPALITY (QUARTILES), 1989-1995.

Average per capita income	1989	1991	1993	1995	Δ1989-1995	
First quartile (0-25%)	2.4	13.4	23.9	29.0	26.6	(1108%)
Second quartile (26-50%)	5.3	16.9	39.6	43.7	37.7	(725%)
Third quartile (51-75%)	7.7	23.3	43.0	42.8	35.1	(456%)
Fourth quartile (76-100%)	17.5	36.0	52.1	67.3	49.8	(285%)
Netherlands	8.2	22.2	39.8	45.3	37.1	(452%)
N	603	578	561	524		

Source: SGBO (own calculations).

Next, in Table 5.4 we show how the composition of the town council is related to day-care density and density growth. The pattern is comparable to the previous table. Day-care density is higher in municipalities with a higher percentage of left-wing and female councilors. Also, day-care density growth is larger in municipalities with a higher percentage of left-wing and female councilors.

TABLE 5.4 DAY-CARE SUPPLY IN MUNICIPALITIES (DAY-CARE DENSITY) BY COMPOSTION OF TOWN COUNCIL (QUARTILES), 1989-1995.

Councilors	1989	1991	1993	1995	Δ1989-1995	
Left-wing						
First quartile (0-25%)	3.3	13.4	27.2	31.4	28.1	(851%)
Second quartile (26-50%)	4.1	19.0	34.1	41.7	37.6	(917%)
Third quartile (51-75%)	8.4	21.6	42.1	47.4	39.0	(464%)
Fourth quartile (76-100%)	17.2	35.6	57.1	60.6	43.4	(252%)
Female						
First quartile (0-25%)	3.6	13.4	18.9	33.7	30.1	(836%)
Second quartile (26-50%)	4.4	17.8	33.5	39.8	35.4	(805%)
Third quartile (51-75%)	12.4	27.8	44.8	50.8	38.4	(310%)
Fourth quartile (76-100%)	13.4	31.3	52.5	57.9	44.5	(332%)
Netherlands	8.2	22.2	39.8	45.3	37.1	(452%)
N	603	578	561	524		

Source: SGBO (own calculations).

Finally, Table 5.5 shows how the employment structure of a municipality is related to day-care density. Again, both day-care density and density growth are higher in municipalities where the percentage of non-commercial services is higher.

TABLE 5.5 DAY-CARE SUPPLY IN MUNICIPALITIES (DAY-CARE DENSITY) BY MUNICIPALITY'S EMPLOYMENT STRUCTURE (QUARTILES), 1989-1995.

Percentage non-commercial	1989	1991	1993	1995	Δ1989-1995	
First quartile (0-25%)	4.8	17.2	32.4	37.1	32.3	(673%)
Second quartile (26-50%)	4.1	17.8	32.6	36.7	32.6	(795%)
Third quartile (51-75%)	9.7	20.1	40.1	49.9	40.2	(414%)
Fourth quartile (76-100%)	14.2	33.9	54.1	59.7	45.5	(320%)
Netherlands	8.2	22.2	39.8	45.3	37.1	(452%)
N	603	578	561	524		

Source: SGBO (own calculations).

5.3 Analysis of differences in the supply among day-care centers

5.3.1 Organizational characteristics

Day-care centers can offer one or several child-care arrangements. Figure 5.1 shows that most day-care centers offer full-time day care. Somewhat more than 50% of the centers offer part-time care. Of the day-care centers 39% offers not only full-time and/or part-time care but care for school-age child care as well. 24-Hour care is not very common. A day-care center has, on average, about 35 full-time places, 18 part-time places and 19 school-age child-care places.

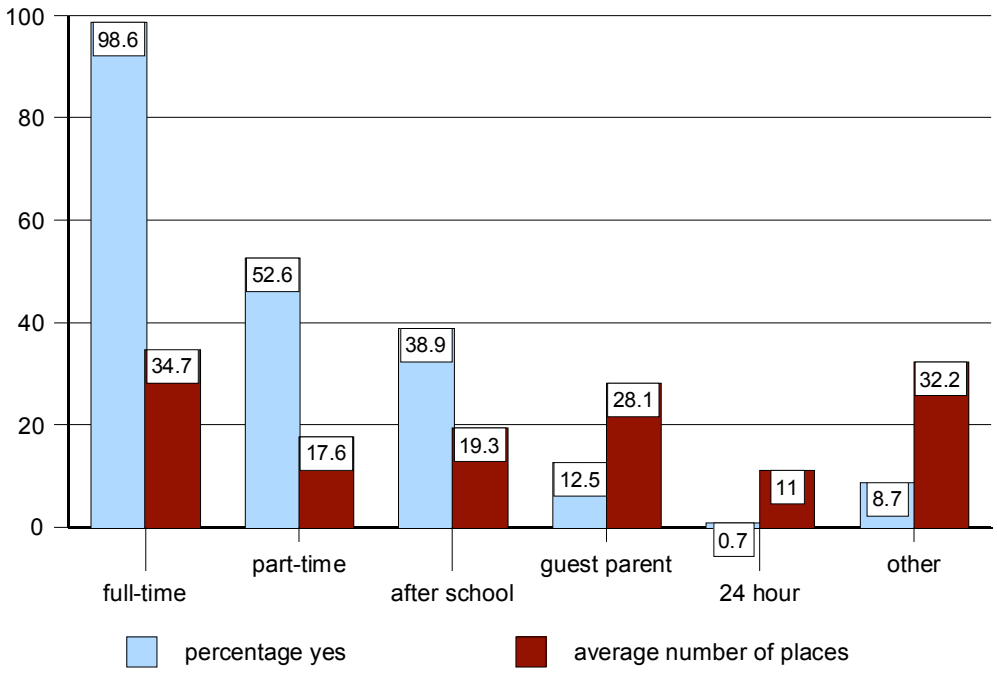


FIGURE 5.1 CHILD-CARE ARRANGEMENTS THAT ARE OFFERED AND THE MEAN NUMBER OF PLACES PER ARRANGEMENT (N=289).

Figure 5.2 shows in which years the day-care centers were founded. The figure clearly shows the effect of the Stimulative Measures on day-care supply. About half of the centers were established after 1990. This makes the day-care sector a very young industry.

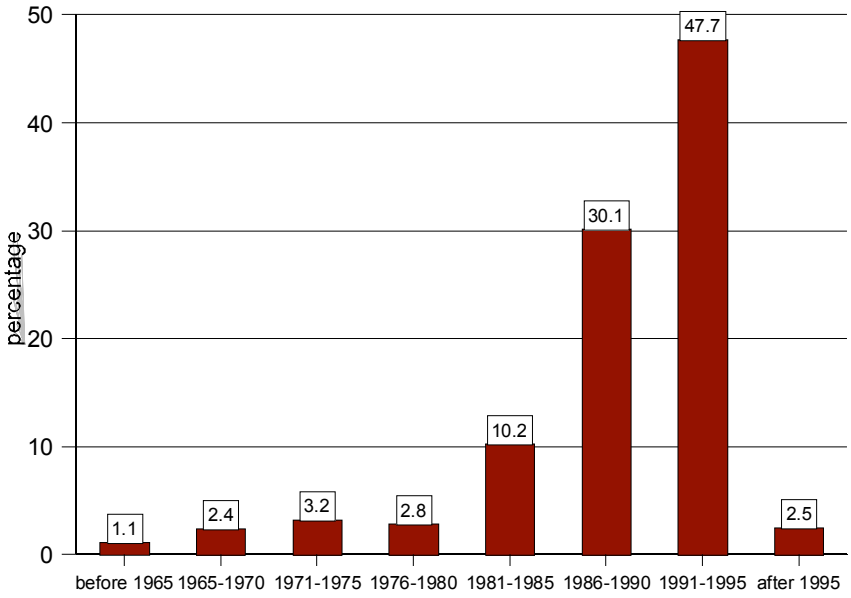


FIGURE 5.2 DAY-CARE CENTERS BY YEAR OF ESTABLISHMENT (N=289).

Table 5.6 describes several characteristics of the care that is supplied by the day-care center. The first three rows of the table examine characteristics that are related to the pedagogical climate in the center. These aspects are related to continuity of care and the attachment of children to center staff (see, for example, Britner & Phillips, 1995; CQCO, 1995; Miltenburg & Singer, 1994). The table shows that 89% of the centers require children to be in the center for at least a certain number of days, whereas 38% of the centers (also) puts a maximum limit to the number of days a child can be cared for by the center. The average minimum number of days a child is required to be in the center is about one and a half. The average maximum number of days is 4.9, which is almost equal to the absolute maximum number of days a child can be in the center. Seventy-six percent of the centers require that staff members should work a minimum number of hours per week. On average this is 18.5 hours per week.

The second set of three characteristics relates to flexibility of care. Few day-care centers (13%) offer flexible forms of day care. There is relatively more flexibility about the time at which a child should be brought to or picked up from the center. In about half of the centers this is possible. Many centers (82%) do not insist that the child be brought on fixed days. Day-care centers are open for somewhat more than an average of 10 hours per days for 50 weeks per year. Thirty-three percent of the centers give priority to children from disadvantaged families and/or handicapped children. Most of the day-care centers (86%) use income-related parental fees.

TABLE 5.6 CHARACTERISTICS OF THE CARE THAT IS SUPPLIED (N=289).

Characteristic	Percentage	Mean number of ... (standard deviation)
minimum number of *days* that children have to be present in the day-care center	88.6	1.48 (0.97)
maximum number of *days* that children have to be present in the day-care center	37.8	4.90 (0.81)
minimum number of *hours* per week that part-time staff has to work	76.1	18.50 (4.78)
presence of flexible forms of day care	13.2	-
fetching and delivering of children at variable times	49.7	-
variable days that the child can be present at the day-care center	82.2	-
hours open per day	-	10.25 (2.11)
weeks open per year	-	50.21 (1.34)
priority to children from disadvantaged families and/or handicapped children	33.1	-
use of income-related parental fees	86.3	-

In some of the following figures differences in day-care supply among centers are related to the kind of center. Three types of day-care centers can be distinguished: 1. Independent day-care centers; 2. Day-care centers that belong to an umbrella organization that has multiple tasks (including activities other than child care); 3. Day-care centers that belong to an umbrella organization that has multiple day-care centers. About 40% of day-care centers are independent. Thirty percent are part of an organization with multiple centers and about 30% are part of an organization that has a range of multiple activities.

Before going into differences in day-care efficiency, quality, percentage of employer-financed and private places, and the price as this relates to the type of day-care center, we will examine some other differences in the characteristics associated with these centers (Figures 5.3 and 5.4). There is a clear difference in the size of the three types of centers. Figure 5.3 shows the average number of places in the three types.[78] Day-care centers belonging to an umbrella organization with multiple centers are the largest. Independent day-care centers are the smallest. In the figure an indication is also given of how many of the different kinds of places (subsidized, employer-financed, and private) are to be found in the three types of centers. It is significant that day-care centers that belong to an umbrella organization with multiple tasks have relatively many subsidized places. Employer-financed places are more often found in day-care centers belonging to an umbrella organization with multiple day-care centers, whereas independent centers have relatively speaking the most private places.

[78] Figures 5.3, 5.5b, and 5.8 report on 242 cases instead of 289 like in the other figures, because there were fewer observations for this particular variable (number of places).

FIGURE 5.3 MEAN NUMBER OF SUBSIDIZED, EMPLOYER-FINANCED, AND PRIVATE PLACES BY TYPE OF DAY-CARE CENTER (N=242).

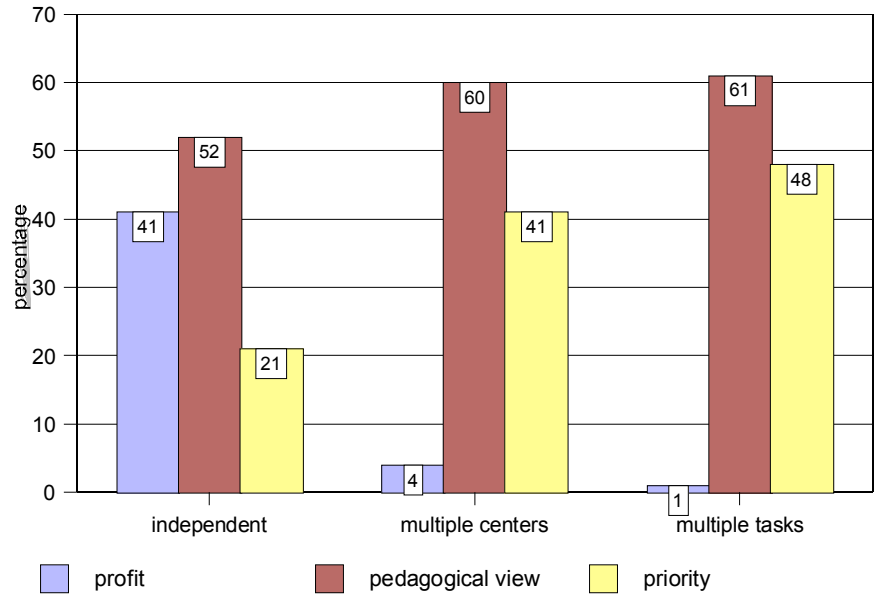


FIGURE 5.4 PERCENTAGE OF DAY-CARE CENTER WITH PROFIT INCENTIVE, PEDAGOGICAL VIEW, AND PRIORITY TO CERTAIN CHILDREN, BY TYPE OF DAY-CARE CENTER (N=289).

Other differences between the three types of centers can be found in the profit motive, their pedagogical position, and the extent to which they give priority to children from disadvantaged families and/or handicapped children. Figure 5.4 shows that hardly any of the non-independent centers seeks to make a profit. These types of centers quite often work according to a particular pedagogical system. The non-independent centers indicate more often that they give priority to children from disadvantaged families and/or handicapped children.

5.3.2 Personnel

In an average day-care center most staff-members work between 15 and 38 hours per week (see Table 5.7). On average about 6.5 full time equivelent (fte) paid staff-members are employed by the day-care center. On average there is about 1.3 fte for supportive tasks. Paid personnel are assisted in their work by non-salaried personnel, volunteers, and trainees. Volunteers form part of only a small part of this category. Much work is done by trainees. They constitute 17% of the total number of staff-members.

TABLE 5.7 STAFF OF DAY-CARE CENTERS: BY CATEGORY (N=289).

Category	Number of employees	Number of fte's
Management	0.96	0.81
Staff members		
0 – 14 hours	0.55	0.11
15 – 38 hours	7.14	4.64
38 + hours	1.94	1.73
Group aid	0.66	0.50
Clerical	0.91	0.53
Other	0.37	0.30
Total paid	*12.53*	*8.62*
Not salaried[a)]	1.04	0.45
Volunteers	0.45	0.09
Trainees	2.68	1.42
Total unpaid	*4.17*	*1.96*
Total	***16.70***	***10.58***

a): Persons who are paid but who are not employed on a permanent basis and for whom no social security has to be paid (including temporary employees and personnel within the framework of job pools, JWG, WSW or WVM).

Table 5.8 breaks down the teachers according to their educational level. Most teachers (80%) have attended an MBO-school.

TABLE 5.8 LEVEL OF EDUCATION OF CENTER STAFF (N=289).

Category	Number of employees		Number of fte's	
LBO	0.33	(3%)	0.15	(2%)
MBO	8.10	(80%)	5.29	(81%)
HBO	1.52	(15%)	0.99	(15%)
Other	0.20	(2%)	0.12	(2%)
Total	*10.15*	*(100%)*	*6.55*	*(100%)*

5.4 Day-care efficiency, quality, prices, and percentage of employer-financed and private places

In this section we present some bivariate analyses for differences in the supply among day-care centers. We break down some of the organizational characteristics that were dealt with in the previous section. It should be noted that the values of the price-quality ratio should be interpreted in the reverse way: the higher the mean value of the price-quality ratio, the lower the efficiency.

5.4.1 The location manager

Figure 5.5A shows how norms with respect to quality are related to day-care quality as measured by the staff/child ratio, the mean level of education of center staff, and the quality scale. The norms with respect to quality run from weak to strong. The results are not straightforward. The staff/child ratio is lower when the norms relating to quality are stronger. There are fewer staff per child when day-care decision-makers are faced with stronger norms as far as quality is concerned. The mean level of education of center staff does not seem to be related to norms relating to quality. The relationship between norms with respect to quality and the score on the quality scale seems to be absent. However, from this (or any other bivariate analysis) we cannot conclude that our Hypothesis 5a, which stated that stronger norms with respect to quality would lead to higher quality, should be refuted. Multivariate analyses are needed to test whether this is really the case. Figure 5.5B shows how norms with respect to equity are related to the percentage of employer-financed and private places. The figure shows that stronger norms with respect to equity are related to a higher percentage of employer-financed places, and a lower percentage of private places. This implies that stronger norms with respect to equity are coupled with relatively more subsidized places (subsidized places being the complement of employer-financed plus private places.

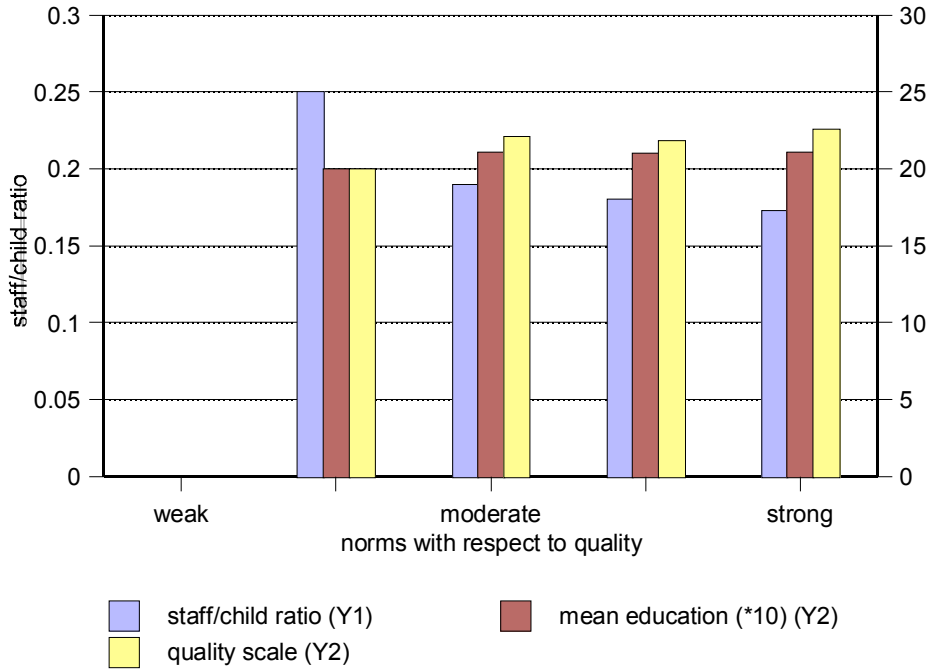


FIGURE 5.5A STAFF/CHILD RATIO AND SCORE ON QUALITY SCALE RELATED TO NORMS OF DAY-CARE CENTER'S SIGNIFICANT OTHERS WITH RESPECT TO QUALITY (N=289).

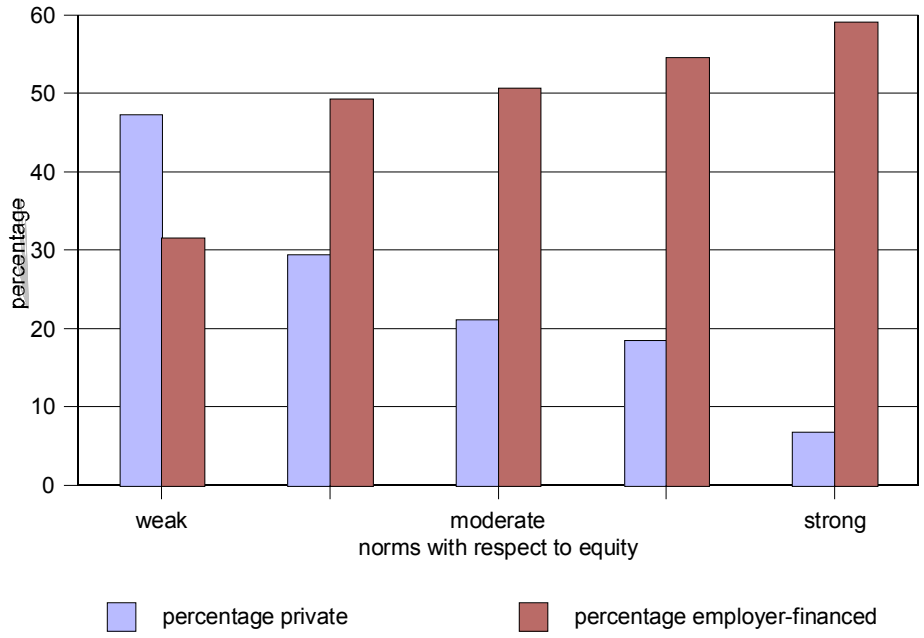


FIGURE 5.5B PERCENTAGE OF EMPLOYER-FINANCED AND PRIVATE PLACES RELATED TO NORMS OF DAY-CARE CENTER'S SIGNIFICANT OTHERS WITH RESPECT TO EQUITY (N=242).

5.4.2 The organization

Below, differences in supply among day-care centers are related to the structural characteristics of day-care centers.

Table 5.9 shows the differences in day-care efficiency, quality, percentage of employer-financed and private places, and price between nonprofit and for-profit centers. Looking at the price-quality ratio, there is no difference between for-profit and nonprofit centers. The mean value of the price-quality is the same for both types of centers. In contrast, for-profit centers realize a higher degree of occupancy. The differences in the degree of occupancy are small, but significant. With respect to quality, the centers only differ with respect to the staff/child ratio. Nonprofit centers have a higher staff/child ratio than for-profit centers. The two types do not differ with respect to the mean level of education of center staff or the score on the quality scale. Nonprofit and for-profit differ considerably with respect to the percentage of employer-financed and private places. Nonprofit centers have relatively more employer-financed places, whereas for-profit centers have relatively more private places. The two types of center also differ considerably over price. Prices are about NLG 500 higher in nonprofit centers.

TABLE 5.9 DIFFERENCES IN SUPPLY AMONG CENTERS, NONPROFIT AND FOR-PROFIT CENTERS (N=289).

Aspect	Nonprofit Mean (sd)		For-profit [a] Mean (sd)	
Efficiency				
Price divided by staff/child ratio	8.59	(2.86)	8.59	(2.91)
Degree of occupancy	0.85	(0.10)	0.91	(0.09) **
Quality				
Staff/child ratio	0.181	(0.05)	0.164	(0.06) *
Mean education of staff	2.09	(0.24)	2.11	(0.22)
Quality scale	21.87	(3.01)	22.57	(3.95)
Percentage of employer-financed places	56.08	(25.96)	29.92	(27.42) **
Percentage of private places	11.03	(20.39)	66.78	(30.41) **
Price (10^3)*	17.347	(1.30)	16.879	(1.65) *

[a] T-test of difference in means: ** = significant at the 1% level; * = significant at the 5% level.

Figures 5.6 - 5.9 relate differences in supply among centers to the different types of centers that were distinguished above: independent day-care centers, day-care centers that belong to umbrella organizations that have multiple tasks (also other activities than child care), and day-care centers that belong to an umbrella organization that has multiple day-care centers. Figure 5.6 shows for both efficiency measures the same differences between the three types of day-care centers: independent centers are more efficient than non-independent centers.

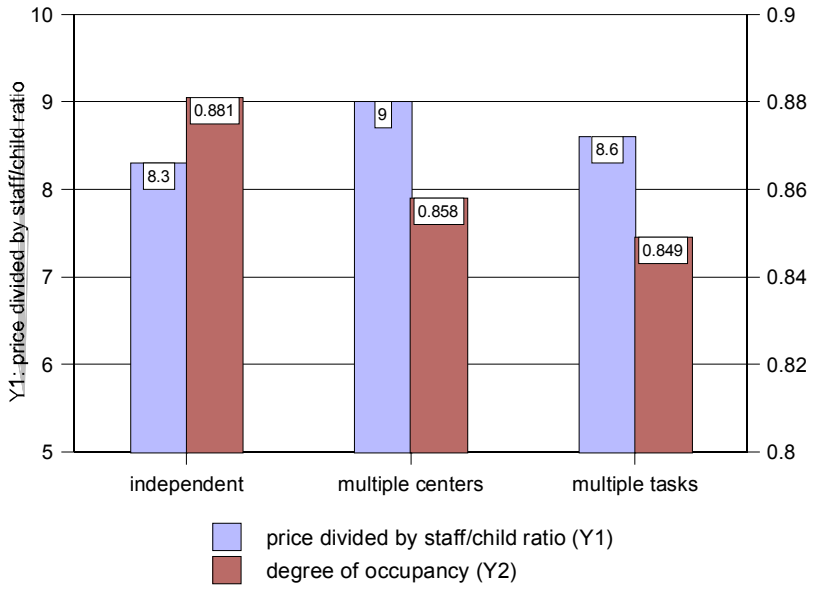


FIGURE 5.6 EFFICIENCY BY TYPE OF DAY-CARE CENTER (N=289).

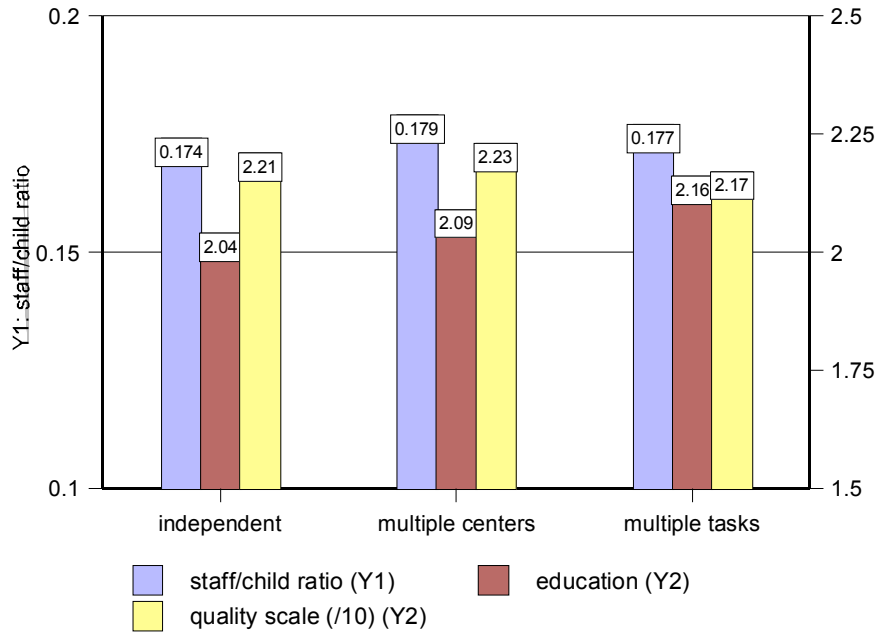


FIGURE 5.7 QUALITY BY TYPE OF DAY-CARE CENTER (N=289).

Quality is measured in three ways, by the staff/child ratio, the mean level of education of center staff, and the total score on the quality scale. Figure 5.7 shows that there are hardly any differences in quality between the three types of day-care centers.

Figure 5.8 presents the differences in the percentage of employer-financed and private places. The figure shows that there are large differences in the percentage of employer-financed and private places between the three types of centers. Compared to the nonindependent centers, the independent centers have relatively more private places, whereas non-independent centers have relatively more employer-financed places.

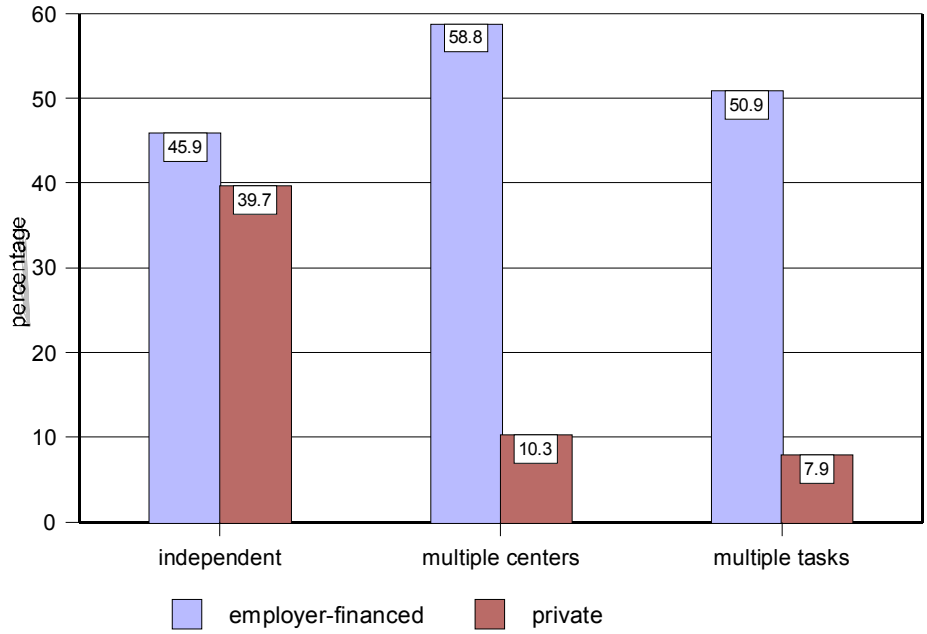


FIGURE 5.8 PERCENTAGE OF EMPLOYER-FINANCED AND PRIVATE PLACES BY TYPE OF DAY-CARE CENTER (N=242).

Differences in prices are shown in Figure 5.9. Prices are highest in centers that are part of an umbrella organization. There, the price of a child place is about NLG 500 per year higher than in independent centers.

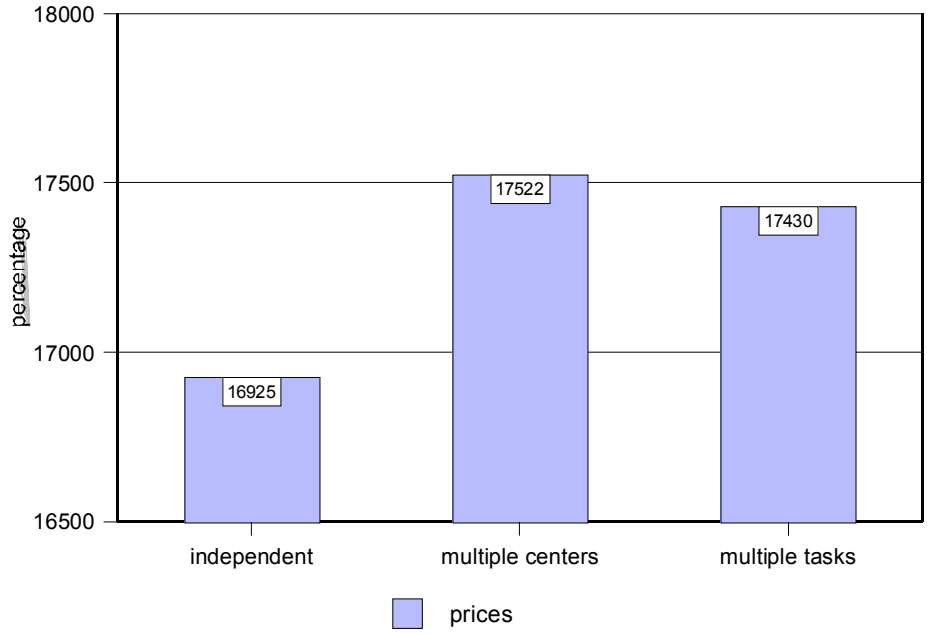


FIGURE 5.9 PRICE BY TYPE OF DAY-CARE CENTER (N=289).

In Table 5.10 differences in supply among day-care centers are related to the scale of the organization. From the table we can see that efficiency, in terms of the price-quality ratio, is lower in larger centers. Larger centers charge higher prices for the same quality. Efficiency as measured by the degree of occupancy is higher in larger centers. Also quality, as measured by staff/child ratio and the mean level of education of center staff, is lower in the larger centers. By contrast, the score on the quality scale is somewhat higher in the largest centers. Larger centers have relatively more employer-financed places, and relatively fewer private places, except for the centers with more than 60 places. There are also differences in the prices between the centers of different sizes. The larger the center the higher the price they charge.

TABLE 5.10 DIFFERENCES IN SUPPLY AMONG CENTERS BY SCALE OF THE DAY-CARE CENTER (N=289).

Aspect	1-20 places Mean (sd)		21-40 places Mean (sd)		41-60 places Mean (sd)		>60 places Mean (sd)	
Efficiency								
Price divided by staff/child ratio[a]	8.09	(3.27)	8.54	(2.45)	8.91	(2.88)	9.10	(3.06)
Degree of occupancy	0.86	(0.12)	0.86	(0.11)	0.88	(0.08)	0.89	(0.08)
Quality								
Staff/child ratio	0.183	(0.06)	0.177	(0.05)	0.174	(0.05)	0.174	(0.05)
Mean education of staff	2.13	(0.27)	2.08	(0.25)	2.10	(0.19)	2.05	(0.19)
Quality scale	21.8	(3.07)	21.7	(3.29)	21.8	(2.97)	23.7	(3.50)
Percentage of employer-financed places	42.6	(27.2)	49.9	(29.1)	58.2	(27.3)	53.7	(27.7)
Percentage of private places	34.8	(38.0)	23.1	(32.7)	13.3	(22.0)	17.8	(29.3)
Price (10^3)*	17.040	(1.43)	17.172	(1.31)	17.400	(1.52)	17.604	(1.15)

[a] The lower the price-quality ratio, the higher efficiency.

Table 5.11 evaluates whether there are differences in the supply among day-care centers related to whether or not the center has multiple outputs. Centers with multiple outputs are expected to benefit from economies of scope. Table 5.11 shows that centers with multiple outputs (the column on the right) have a better price-quality ratio than centers without scope, although not significantly better. Conversely, centers without scope realize a higher degree of occupancy. There are no differences in quality between the centers with and without scope. Centers with multiple outputs have relatively less private places. Scope does not seem to matter for the percentage of employer-financed places and price.

TABLE 5.11 DIFFERENCES IN SUPPLY AMONG CENTERS, SCOPE OR NOT (N=289).

Aspect	No scope Mean (sd)		Scope [a] Mean (sd)	
Efficiency				
Price divided by staff/child ratio	8.77	(3.02)	8.36	(2.64)
Degree of occupancy	0.88	(0.08)	0.84	(0.12) **
Quality				
Staff/child ratio	0.174	(0.05)	0.181	(0.05)
Mean education of staff	2.10	(0.25)	2.09	(0.21)
Quality scale	21.96	(2.92)	22.07	(3.58)
Percentage of employer-financed places	48.07	(30.86)	52.72	(25.25)
Percentage of private places	27.61	(35.20)	18.75	(28.95) *
Price (10^3)*	17.232	(1.44)	17.280	(1.33)

[a] T-test of difference in means: ** = significant at the 1% level; * = significant at the 5% level.

Table 5.12 relates differences in supply among day-care centers to the presence or absence of formal competition in a local market. Competition is expected to lead to increased efficiency, lower quality, a higher percentage of employer-financed and private places, and lower prices. The table shows that centers that face competition on their local market indeed realize a higher degree of occupancy, but that competition does not lead to a better price-quality ratio. Competition also does not seem to be related to the staff/child ratio and the score on the quality scale. However, the mean level of education of center staff is lower in centers that face competition. The percentage of employer-financed and private places and prices does not seem to be related to competition.

TABLE 5.12 DIFFERENCES IN SUPPLY AMONG CENTERS, COMPETITION OR NOT (N=289).

Aspect	No competition Mean (sd)	Competition[a)] Mean (sd)
Efficiency		
Price divided by staff/child ratio	8.61 (2.64)	8.58 (2.96)
Degree of occupancy	0.84 (0.13)	0.88 (0.08) **
Quality		
Staff/child ratio	0.176 (0.05)	0.178 (0.05)
Mean education of staff	2.13 (0.19)	2.08 (0.25) *
Quality scale	22.00 (3.53)	22.01 (3.09)
Percentage of employer-financed places	51.63 (22.90)	49.50 (31.00)
Percentage of private places	18.81 (28.45)	25.95 (34.53)
*Price (*10^3)*	17.428 (1.18)	17.177 (1.46)

[a)] T-test of difference in means: ** = significant at the 1% level; * = significant at the 5% level.

5.5 Summary

The descriptive analyse of day-care supply in the municipalities show that there were considerable differences in municipal day-care supply between provinces in the Netherlands. In the period 1989-1995, there was relatively more day-care supply in the western part of the country (the Randstad). Also, there was more absolute growth in day-care supply in the same period in this part of the country. Day-care density and day-care density growth are related to demand by parents, municipalities, and employers. The descriptive analyses show that day-care density as well as day-care density growth are higher when (1) parental income is higher, (2) there are relatively more left-wing and female councilors in a town council, and (3) there is a higher percentage of non-commercial services. The question is whether these findings hold when multivariate analyses are performed. This will be done in the next chapter.

In the context of analyzing differences in supply among day-care centers, we will first describe some organizational characteristics. Most day-care centers offer full-time day care and that about half of these centers were established after 1990. A day-care center has, on average, about 40 places. About half of these places are employer-financed, about 30% are subsidized, and the remainder of the

private places. The bivariate analyses in this chapter show that norms with respect to quality are not strongly related to the quality of care. In contrast, in centers where the decision-makers are faced with stronger norms with respect to equity, there are less private places. Differences in supply among day-care centers was also investigated by breaking down the differences for different types of centers. Three types of centers are distinguished: 1. Independent day-care centers (40% of the centers); 2. Day-care centers that belong to an umbrella organization and who have a multiple tasks (also other activities than child care - 30%); 3. Day-care centers that belong to an umbrella organization that have multiple day-care centers (30 %). There are differences in efficiency, percentage of employer-financed and private places, and prices between the three types of centers. They do not differ much in quality. Finally, in this section, differences in supply among centers are evaluated with respect to the size of the organization, whether the center has multiple outputs, whether the center is nonprofit or for-profit, and whether is faces competition. The analyses show that there are mainly differences in supply between nonprofit and for-profit centers. Nonprofit centers realize a lower degree of occupancy, higher quality, relatively more employer-financed places, relatively fewer private places, and higher prices. Size of the organization, whether it has multiple outputs, and competition seem to be less related to differences in supply among centers. Here too we will have to see whether these findings hold when multivariate tests are performed. The next chapter will shed more light on this.

Chapter 6

Explanatory analyses

6.1 Introduction

In this chapter the hypotheses, as formulated in Chapter 3, will be tested. In Section 6.2 the hypotheses with respect to day-care supply in municipalities are tested. The analyses presented in this section try to explain differences in day-care supply in municipalities. This section presents panel regression analyses. The indirect effects of demand by parents on day-care supply in municipalities, via the composition of the town council, are also analyzed. Section 6.3 discusses the results for the analyses of differences in supply among day-care centers. The analyses of efficiency, quality, the percentage of employer-financed and private places, and price will be covered in Section 6.3.1 to 6.3.4. An evaluation of the analyses of differences in the supply of day-care centers is given in Section 6.3.5. Finally, Section 6.4 contains a summary.

6.2 Day-care supply in municipalities

In this section Hypotheses 1-5 will be tested. First, in Section 6.2.1 Hypotheses 1-3 will be tested. These hypotheses relate demand for day care by parents, municipalities, and employers directly to day-care supply in municipalities, as measured by day-care density. Second, in Section 6.2.2, the indirect effects of demand for day care by parents on day-care supply, via the composition of the town council (Hypotheses 4a-4f), will be added to the model. Third, in Section 6.2.3 changes in the

effects of the explanatory variables on day-care supply are analyzed (Hypotheses 5a-5f). See Table 3.1 for a summary of the expected effects. Section 6.2.4 evaluates the results of the analyses to explain day-care supply in municipalities.

6.2.1 Explaining day-care supply in municipalities, 1989-1995

In Section 4.4.1 it was stated that there might be contemporaneous correlation. It can be expected that day-care density in a municipality in a particular year will be largely determined by the municipality's day-care density during the previous year. To correct for this clustering, panel regression analysis is used to test the hypotheses. In particular, we estimate a population-averaged panel-data model.[79] This model estimates general linear models that allow us to specify the within-group correlation structure for the panels (Stata, 1999). The first column in Table 6.1 presents the results of panel regression analysis to explain differences in day-care supply in municipalities. Separate analyses were performed to test Hypotheses 1a and 1e. Information on the number of children per household (Hypothesis 1a) is only available for 1995, whereas data with respect to norms (Hypothesis 1e) are only available for 1993 and 1995. The second column of Table 6.1 gives the results of the test of all of the Hypotheses 1-3, using OLS regression analysis. First, the results of the panel analysis will be discussed.

The first column in Table 6.1 shows that the monetary constraints parents face, as measured by parental income, affect day-care supply in each year, except for 1989. This largely confirms Hypothesis 1b. In municipalities where the average income of parents is higher, more day-care is supplied. Next to monetary constraints, parents face time constraints. These constraints are measured by the presence or absence of a partner (Hypothesis 1c) and the average distance to a day-care center (Hypothesis 1d). The results of the analysis show that the time constraint parents face also affect day-care supply in municipalities. The relative number of single parents did not affect day-care supply in municipalities in 1989 and 1991. In 1993 and 1995, however, day-care supply in municipalities was higher in municipalities with relatively more single parents. This partially confirms Hypothesis 1c. The average distance to a day-care center was expected to have a negative effect on day-care supply in municipalities (Hypothesis 1d). This hypothesis is confirmed by the analysis. The more time costs parents have to make to travel to the day-care center (a larger average distance to a center), the less day-care supply in municipalities. Substitutes for formal day care, like informal day care, may also (negatively) affect the supply of day care (Hypothesis 1f). The analysis shows that this is the case. The more informal supply in a municipality, the less day-care supply in municipalities. Thus, Hypothesis 1f can also be confirmed. Demand by municipalities, as reflected in the composition of the town council, has a positive effect on day-care supply in municipalities in every year except 1989. This largely confirms Hypothesis 2. More day care is supplied in municipalities with a relatively large number of left-wing and female councilors. Demand by employers, as measured by

[79] We also performed fixed-effects panel regression analyses and maximum likelihood panel regression analyses. The results of these analyses do not differ much from the population-averaged panel regression analyses.

the percentage of non-commercial services, also has a positive effect on day-care supply in municipalities in every year except 1989. This largely confirms Hypothesis 3.

TABLE 6.1 RESULTS OF PANEL AND OLS REGRESSION ANALYSES TO EXPLAIN DAY-CARE DENSITY, 1989-1995.

INDEPENDENT VARIABLES	Panel [a)] (z-values)		OLS (1995 only) (t-values)	
Year				
1989	*reference*		-	
1991	-31.10 *	(-2.42)	-	
1993	-54.17 **	(-4.16)	-	
1995	-88.67 **	(-6.78)	-	
Demand by parents				
Number of children up to four years per family				
(1995 only)	-		28.61	(0.79)
*Parental income (*10^{-3})*				
1989	0.99	(1.49)	-	
1991	3.19 **	(4.74)	-	
1993	4.50 **	(6.72)	-	
1995	6.84 **	(10.09)	6.62 **	(6.70)
Number of single parents				
1989	1.07	(1.54)	-	
1991	1.01	(1.47)	-	
1993	2.64 **	(3.82)	-	
1995	3.16 **	(4.54)	5.66 **	(5.65)
Average distance to day-care center				
1989-1995	-6.63 **	(-6.86)	-1.42	(-0.71)
Norms				
1995	-		0.45 *	(2.40)
Informal supply				
1989-1995	-1.65 **	(-4.18)	-0.44	(-0.56)

TABLE 6.1 - (CONTINUED).

INDEPENDENT VARIABLES	Panel [a] (z-values)		OLS (1995 only) (t-values)	
Demand by municipalities				
Percentage of left-wing councilors				
1989	0.05	(0.67)	-	
1991	0.21 **	(2.69)	-	
1993	0.24 **	(3.09)	-	
1995	0.21 **	(2.75)	0.12	(1.15)
Percentage of female councilors				
1989	0.09	(0.73)	-	
1991	0.24 †	(1.92)	-	
1993	0.41 **	(3.34)	-	
1995	0.40 **	(3.22)	0.06	(0.44)
Demand by employers				
Percentage of non-commercial services				
1989	0.08	(0.89)	-	
1991	0.17 †	(1.91)	-	
1993	0.31 **	(3.53)	-	
1995	0.29 **	(3.30)	0.27 **	(2.62)
Constant	-26.83 **	(2.65)	-152.98	(-6.08)
Wald χ^2 (25 d.f.)	2009.81 **			
R^2			0.398 **	
N	2266	(632 municipalities)	524	

[a] Unstandardized coefficients; ** = significant at 1% level; * = significant at 5% level; † = significant at 10% level.
Source: supply data from SGBO; demand data from Statistics Netherlands.

The second column of Table 6.1 show the test of all of the previous hypotheses including Hypotheses 1a and 1e using OLS regression analysis for 1995 only. One should be careful when comparing the results of the two analyses, because of the differences in the regression analyses used and, consequently, the difference in the number of cases used in the analyses (632 versus 524). Hypothesis 1a stated that, because of the costs involved, less day care would be demanded by families with a larger number of children up to four years of age. The analysis shows that this hypothesis is not confirmed. The number of children per family does not affect day-care density. Compared to the panel analysis, the effect of parental income on day-care supply in municipalities is

still present. However, an effect of average distance to a day-care center on day-care supply in municipalities is no longer present (Hypothesis 1d). The relative number of single parents still has a positive effect on day-care supply in municipalities. In this analysis the test of Hypothesis 1e is also included. This hypothesis states that, in addition to monetary and time constraints, parents' behavior is affected by norms. In particular, we expected that more day care would be supplied in municipalities where parents are faced with more modern norms. The analysis shows that this is indeed true. Norms do have an effect on day-care supply in municipalities. More day care is supplied in municipalities where the norms are more modern. This confirms Hypothesis 1e. However, in this analysis the effect of the amount of informal supply on day-care supply in municipalities is no longer present. Also, the composition of the town council no longer affects day-care supply in municipalities. There is still the positive effect of the percentage of non-commercial services on day-care supply. Therefore, compared to the panel analysis, the regression analysis that tests for all variables, shows that the number of children per family does not affect day-care supply in municipalities, and that norms do affect day-care supply in municipalities. The effect of the average distance to a day-care center and informal supply on day-care supply in municipalities is no longer present. Also, the composition of the town councils no longer has an effect on day-care supply in municipalities.

6.2.2 Indirect effects

In Chapter 3 we hypothesized that demand by parents may also indirectly affect day-care supply in municipalities. Voters are expected to exert pressure on left-wing and female councilors to create more day-care facilities. In Table 6.2, these indirect effects are added to the panel analysis. Table 6.3 presents the indirect and direct effects for the OLS regression analysis (1995 only). The results of the underlying analyses are given in Appendix B, Tables B1 and B2.

Table 6.2 shows that parental income has a small indirect effect on day-care supply in municipalities via the percentage of left-wing councilors, whereas the indirect effect via the percentage of female councilors is relatively large. However, due to the large increase of the direct effect parental income has on day-care supply, the relative contribution of the indirect effect on the total effect becomes smaller over time. The relative number of single parents does not have a large indirect effect on day-care supply in municipalities. The indirect effect via the percentage of left-wing councilors is somewhat larger than the indirect effect via the percentage of female councilors. Also the indirect effects of the average distance to a day-care center and informal supply are relatively small.

TABLE 6.2 DIRECT, INDIRECT, AND TOTAL EFFECTS OF PANEL REGRESSION ANALYSES TO EXPLAIN DAY-CARE DENSITY, 1989-1995 (N=2266, 632 MUNICIPALITIES).

INDEPENDENT VARIABLES	STANDARDIZED COEFFICIENTS			
	Direct	Indirect via left-wing	Indirect via female	Total
Demand by parents				
Parental income				
1989	0.071	-0.003	0.087	0.155
1991	0.180	-0.002	0.152	0.329
1993	0.227	0.004	0.201	0.431
1995	0.306	0.003	0.168	0.477
Number of single parents				
1989	0.057	0.010	0.003	0.070
1991	0.098	0.073	0.017	0.188
1993	0.193	0.059	0.016	0.268
1995	0.197	0.045	0.013	0.255
Average distance to day-care center				
1989-1995	-0.179	-0.027	-0.067	-0.273
Informal supply				
1989-1995	-0.123	0.002	-0.014	-0.134
Demand by municipalities				
Percentage of left-wing councilors				
1989	0.052			0.052
1991	0.131			0.131
1993	0.111			0.111
1995	0.087			0.087
Percentage of female councilors				
1989	0.057			0.057
1991	0.100			0.100
1993	0.129			0.129
1995	0.108			0.108
Demand by employers				
Percentage of non-commercial services				
1989	0.058			0.058
1991	0.082			0.082
1993	0.110			0.110
1995	0.101			0.101

Source: supply data from SGBO; demand data from Statistics Netherlands.

Noteworthy is the negative indirect effect of informal supply via the percentage of female councilors. This decreases the direct effect by about 30%. Overall, we can conclude from Table 6.2 that, in every year, the direct effects of demand for day care by parents are larger than the indirect effects. Apparently, pressure by parents on councilors is not more effective in the town councils with a relatively large number of left-wing and female councilors. The indirect effects via the percentage of left-wing councilors on day-care supply in municipalities are particularly weak. The standardized effects also show that parental income and the average distance to a day-care center are the factors that most affect day-care supply.

Table 6.3 presents the direct and indirect effects for 1995 only. The indirect effects of demand for day care by parents were also investigated for this year. From the table we see that there are only small indirect effects on day-care supply in municipalities via both the percentage of left-wing and the percentage of female councilors. The indirect effects do not contribute much to the direct effects.

TABLE 6.3 DIRECT, INDIRECT, AND TOTAL EFFECTS OF OLS REGRESSION ANALYSES TO EXPLAIN DAY-CARE DENSITY, 1995 (N = 524 MUNICIPALITIES).

INDEPENDENT VARIABLES	Direct	Indirect via left-wing	Indirect via female	Total
Demand by parents				
Number of children per household	0.030	0.004	0.001	0.035
Parental income	0.296	0.007	0.005	0.308
Number of single parents	0.352	0.031	0.005	0.388
Average distance to a day-care center	-0.033	-0.003	-0.000	0.036
Norms	-0.107	-0.007	-0.002	-0.116
Informal supply	0.030	0.009	0.001	0.040
Demand by municipalities				
Percentage of left-wing councilors	0.048			0.048
Percentage of female councilors	0.017			0.017
Demand by employers				
Percentage of non-commercial services	0.092			0.092

Source: supply data from SGBO; demand data from Statistics Netherlands.

6.2.3 Changes in the effects of explanatory variables on day-care supply

Due to the decentralization of policy and the public-partnership under the Stimulative Measures on child care changes in the role of parents, town councils, and employers in the day-care sector are expected (Hypotheses 5a-f). More specifically, we expected the effect of parental income to become more important between 1989 and 1995 (Hypothesis 5a). The effect of the relative number of single parents was expected first to decrease (from 1989-1993) and then to increase after 1993 (Hypothesis 5b). The decentralization of policy was expected to lead to an initial increase in the importance of the composition of the town council. However, due to the increased involvement of employers, town councils can also be expected to become gradually less important (Hypotheses 5c and 5d). The municipality's employment structure is expected to become a more important factor affecting day-care supply in municipalities between 1989 and 1995 (Hypotheses 5e and 5f). Table 6.4 shows the results of the tests of Hypotheses 5a-5f. In this table the differences in the effects of each variable are tested on a two-, four-, and six-year basis.

In line with Hypothesis 5a, we find that parental income indeed becomes a stronger determinant of day-care supply in municipalities over time. Table 6.1 showed that whereas parental income has no effect on day-care density in 1989, it is significant and it becomes larger between 1991 and 1995. Table 6.4 shows that the effect of parental income on day-care supply in municipalities increased especially between 1993 and 1995. In contrast to our Hypothesis 5b, the relative number of single parents did not become less important between 1989 and 1993. Rather, the effect increased, as Tables 6.1 and 6.4 show. Between 1993 and 1995 the effect of the relative number of single parents increased, which is in line with the second half of Hypothesis 5b. Thus, Hypothesis 5b can only be partially confirmed. Although Table 6.1 indicated that the composition of the town council became a more important factor affecting day-care supply in municipalities, Table 6.4 shows that most of these differences in effects are not significant. In line with Hypotheses 5c and 5d we do find a small initial increase in the effect of the percentage of left-wing and female councilors on day-care supply (1989-1993), but (in contrast to the hypotheses) there is no decrease in these effects after 1993. The effect of the percentage of female councilors on day-care supply becomes even stronger over the whole period 1989-1995. So, Hypotheses 5c and 5d can be partially confirmed. Similar conclusions can be drawn with respect to the increased involvement of employers in the day-care sector. Here too most effects do not differ significantly from each other. There is, however, a significant difference in the effects of 1989 and 1995. Thus, Hypotheses 5e and 5f can by and large be confirmed.

TABLE 6.4 DIFFERENCES IN THE EFFECTS OF THE EXPLANATORY VARIABLES, 1989-1995.

INDEPENDENT VARIABLES	χ^2 (df 1) [a]
*Parental income (*10-3)*	
1989-1991	6.62 *
1991-1993	3.83 †
1993-1995	62.30 **
1989-1993	16.75 **
1991-1995	27.73 **
1989-1995	46.21 **
Number of single parents	
1989-1991	0.01
1991-1993	7.38 **
1993-1995	3.96 *
1989-1993	3.78 †
1991-1995	11.94 **
1989-1995	6.68 **
Percentage of left-wing councilors	
1989-1991	2.46
1991-1993	0.14
1993-1995	0.53
1989-1993	3.45 †
1991-1995	0.00
1989-1995	2.59
Percentage of female councilors	
1989-1991	0.86
1991-1993	2.00
1993-1995	0.05
1989-1993	4.00 *
1991-1995	1.60
1989-1995	3.69 †
Percentage of non-commercial services	
1989-1991	0.65
1991-1993	2.56
1993-1995	0.22
1989-1993	4.13 *
1991-1995	1.81
1989-1995	3.51 †

[a] Unstandardized coefficients; ** = significant at 1% level; * = significant at 5% level; † = significant at 10% level.
Source: supply data from SGBO; demand data from Statistics Netherlands.

6.3 Differences in the supply among day-care centers

This section presents the results of hypotheses tested with respect to differences in the supply among day-care centers (see Table 3.2 for an overview of the hypothesized effects). OLS regression analyses were performed to explain differences in supply between day-care centers. These analyses also allow us to answer the question of how the transition from welfare to market affects day-care supply (Research Question 2). The effects of the variables profit and competition on day-care supply are of particular interest as far as this research question is concerned. Tables 6.5-6.8 present the OLS estimated coefficients for the explanatory variables and robust (Huber/White/ sandwich) measures of their significance (Stata, 1999, `robust'). The robust estimators of variance are used instead of the traditional calculation, because the observations are not independent within clusters, in this case within municipalities (also see Section 4.4.2).[80] Robust estimators are corrected for the clustering of observations. This yields better estimates of the significance of effects. The results of the regression analyses are discussed for the three levels at which the restrictions facing the day-care center decision-maker can be found. As we saw in Chapter 4 the response was quite low for a number of variables. This reduced the number of observations that could be used in the analyses to 253. In the analyses for the percentage of employer-financed and private places somewhat less observations were available (218).

6.3.1 Efficiency

In Table 6.5 the results of the analyses to explain differences in day-care efficiency are presented. In this table the two measurements of day-care efficiency, which were presented in Chapter 4, are used: price divided by staff/child ratio (the price-quality ratio) and the degree of occupancy. The lower the price-quality ratio (lower prices for the same amount of quality), the higher the efficiency. This implies that negative effects should be interpreted as "positive" (and vice versa).

Level of the decision-maker

Norms with respect to quality do not have an effect on efficiency. The stronger quality norms of the decision-maker's significant others do not lead to a lower price-quality ratio (indicating higher efficiency) or a higher degree of occupancy. Hypothesis 6a is thus refuted. Norms with respect to equity also do not have an effect on either efficiency measure, so Hypothesis 6b cannot be confirmed.

[80] The observations are, of course, still assumed to be independent between groups.

TABLE 6.5 RESULTS OF OLS REGRESSION ANALYSES TO EXPLAIN DAY-CARE EFFICIENCY.

	DEPENDENT VARIABLES			
	PRICE [a] DIVIDED BY STAFF/CHILD RATIO		DEGREE OF OCCUPANCY	
INDEPENDENT VARIABLES	UNSTANDARDIZED COEFFICIENTS[b] (t-values)			
Decision maker				
Norms with respect to quality	-0.436	(-1.36)	0.004	(0.40)
Norms with respect to equity	0.248	(0.94)	0.006	(0.77)
Discretion (yes=1)	-0.004	(-0.07)	0.000	(0.13)
Mean level of education	0.311 *	(2.02)	0.002	(0.30)
Number of years experience	-0.040	(-0.80)	-0.000	(-0.02)
Organization				
Profit (yes=1)	0.664	(1.07)	0.052 *	(2.60)
Diversity (yes=1)	-0.121	(-0.25)	-0.008	(-0.48)
National chain (yes=1)	1.880 *	(2.46)	-0.087 *	(-2.36)
Size 1 (0-20 places) (*reference*)	-		-	
Size 2 (21-40 places)	0.798 *	(1.98)	-0.001	(-0.05)
Size 3 (41-60 places)	1.116 *	(2.08)	0.015	(0.72)
Size 4 (>60 places)	1.397 †	(1.79)	0.037	(1.47)
Number of hours open	-0.097	(-0.40)	-0.000	(-0.03)
Scope (yes=1)	-0.652 †	(-1.74)	-0.020	(-1.53)
Background welfare	-0.022 *	(-1.99)	0.000	(0.28)
Pedagogical view (yes=1)	-0.113	(-0.32)	0.004	(0.31)
Environment				
Competition by formal suppliers (yes=1)	-0.290	(-0.57)	0.009	(0.52)
Competition by informal suppliers (yes=1)	-0.021	(-0.75)	0.001	(1.53)
Average per capita income ($*10^{-3}$)	-0.088	(-0.52)	0.017 **	(3.14)
Percentage of left-wing councilors	0.016	(0.77)	0.000	(0.30)
Percentage of female councilors	0.020	(0.83)	-0.001	(-1.19)
Percentage of educational institutions	0.060	(0.84)	0.003	(1.23)
Percentage of government agencies	-0.090 **	(-3.58)	-0.003 *	(-3.12)
Control variables				
Sex (female)	0.379	(0.53)	-0.004	(-0.19)
Age	0.032	(1.01)	0.000	(0.46)
Constant	6.643	(1.38)	0.520 **	(3.32)
R^{2} [a]	0.153 **		0.222 **	
Mean value of dependent variable (sd)	8.589	(2.86)	0.865	(0.10)
n (number of observations used per equation)	253		253	

a) Guilders per fulltime place per month.
b) ** = significant at the 1% level; * = significant at the 5% level; † = significant at the 10% level.
Source: own data collection and Statistics Netherlands.

We expected day-care centers where decision-makers have more discretion to be more efficient (Hypothesis 7). This is not confirmed by the analyses. The degree to which a decision-maker can make her own choices about how the day-care center should operate does not affect the center's level of efficiency. In addition, the results of the analyses show that day-care centers with decision-makers that have relatively more human capital are not more efficient. In contrast, day-care centers with more highly educated location managers are less efficient in terms of the price-quality ratio. The number of years of experience does not affect efficiency. So, as far as efficiency is concerned, Hypothesis 8 cannot be confirmed.

Level of the organization

In contrast to our hypothesis, for-profit day-care centers are not more efficient, when the price-quality ratio is examined. However, for-profit day-care centers do realize a higher degree of occupancy, which is in accordance with Hypothesis 9. Thus, for-profit and nonprofit centers do not differ in the prices they charge per quality unit. Thus, there does not appear to be any shirking. These findings are in line with findings by Mocan (1997), who also found no difference in efficiency between for-profit and nonprofit centers (also see Frank & Salkever, 1994). The finding that for-profit centers have a higher degree of occupancy than nonprofit centers indicates that, in this respect, for-profit centers are more efficient than nonprofit centers. Thus, Hypothesis 9 can only be partially confirmed.

The presence or absence of diversity in tasks does not affect the center's level of efficiency. Thus, Hypothesis 10 is refuted as far as efficiency is concerned. However, we do find that day-care centers that are part of a national chain are less efficient than centers that are not part of such a chain. Centers that are part of a national chain have worse price-quality ratios and they realize a lower degree of occupancy. This is in accordance with Hypothesis 11.

The analysis shows that larger centers are less efficient (more expensive) than smaller centers, i.e. there are diseconomies of scale (similar findings are reported by Preston (1993)). This clearly contradicts the hypothesis that larger centers would operate more efficiently (Hypothesis 12). A Wald test showed that the effects of size 2 to size 4 do not differ from each other. So, centers up to 20 places are more efficient than centers over 20 places. Also the number of hours that a center is open, the other variable related to economies of scale, does not affect the center's level of efficiency.

The results of the analyses give some evidence of economies of scope. Centers that have multiple outputs (other products in addition to regular day care like school-age child care and guest parents) produce more quality for the same price, but do not realize a higher degree of occupancy. So, Hypothesis 13 is only partially confirmed.

Centers that have a background in welfare were expected to be more efficient (Hypothesis 14a). The analysis shows that, with regard to the price-quality ratio, this hypothesis can be confirmed. Centers

that have a background in welfare are more efficient. Whether the center works from a pedagogical view does not affect the center's level of efficiency. Hypothesis 14b is therefore not confirmed.

Level of the environment

In contrast to our expectation, day-care centers that operate on a local market in which there is competition (formal as well as informal) are not more efficient than centers that operate in market without competition. Day-care centers have a higher degree of occupancy when average per capita income is higher. This is not in line with hypothesis 16. This finding can perhaps be explained by the fact that the (probability that) a day-care center will be used increases with parental income (see, for example, Groot & Maassen van den Brink, 1998; Van Dijk, 1994). A relatively large number of parents with a child that is in the center for three or more days, makes it easier for the center to realize a high degree of occupancy.

The composition of the town council does not affect the day-care center's level of efficiency. This contradicts the hypotheses that the percentage of left-wing and the percentage of female councilors would have a negative effect on efficiency (Hypotheses 17a and 17b). Demand by employers as measured by the percentage of educational institutions, has no effect on efficiency. Demand by employers, as measured by the percentage of government agencies, has a negative effect on the price-quality ratio (i.e. more efficiency), but a negative effect on the degree of occupancy.

6.3.2 Quality

In the analysis of day-care quality, three variables measuring quality have been included: staff/child ratio, the mean level of education of staff, and the score on the quality scale. Table 6.6 presents the results of the analyses that seek to explain day-care quality. Only the significant effects of the explanatory variables on day-care quality will be discussed because many of the hypothesized effects are not present.

TABLE 6.6 RESULTS OF OLS REGRESSION ANALYSES TO EXPLAIN DAY-CARE QUALITY.

	DEPENDENT VARIABLES					
	STAFF/CHILD RATIO		MEAN EDUCATION OF STAFF		QUALITY SCALE	
INDEPENDENT VARIABLES	UNSTANDARDIZED COEFFICIENTS [a] (t-values)					
Decision maker						
Norms with respect to quality	0.011 *	(2.01)	-0.016	(-0.66)	-0.367	(-1.37)
Norms with respect to equity	-0.004	(-0.72)	-0.003	(-0.19)	-0.496 †	(-1.72)
Discretion (yes=1)	0.001	(1.27)	0.007	(1.42)	0.030	(0.51)
Mean level of education	-0.003	(-0.91)	0.009	(0.58)	-0.155	(-0.96)
Number of years experience	0.002 †	(1.81)	0.009 †	(1.83)	0.095	(1.33)
Organization						
Profit (yes=1)	-0.030 *	(-2.59)	0.009	(0.19)	0.832	(1.31)
Diversity (yes=1)	-0.004	(-0.50)	-0.121 **	(-3.55)	-0.738 †	(-1.82)
National chain (yes=1)	-0.030 *	(-2.32)	-0.077	(-1.49)	1.004	(1.31)
Size 1 (0-20 places) (*reference*)	-		-		-	
Size 2 (21-40 places)	-0.008	(-1.05)	-0.019	(-0.50)	-0.009	(-0.02)
Size 3 (41-60 places)	-0.012	(-1.30)	-0.019	(-0.45)	0.348	(0.62)
Size 4 (>60 places)	-0.010	(-0.70)	-0.018	(-0.37)	2.711 **	(3.64)
Number of hours open	0.005	(1.11)	-0.027	(-1.28)	0.277	(1.39)
Scope (yes=1)	0.004	(0.52)	-0.078 *	(-2.02)	-0.369	(-0.77)
Background welfare	-0.000	(-0.49)	0.002	(1.48)	0.001	(0.08)
Pedagogical view (yes=1)	0.002	(0.21)	0.048 †	(1.69)	0.065	(0.17)
Environment						
Competition by formal suppliers (yes=1)	0.004	(0.48)	-0.068	(-1.55)	-0.213	(-0.42)
Competition by informal suppliers (yes=1)	0.000	(0.38)	-0.001	(-0.92)	-0.010	(-0.56)
Average per capita income ($*10^{-3}$)	0.002	(0.67)	-0.036 **	(-3.16)	-0.209	(-1.08)
Percentage of left-wing councilors	-0.000	(-1.23)	0.000	(0.21)	0.008	(0.45)
Percentage of female councilors	-0.000	(-0.47)	-0.003	(-0.98)	0.042	(1.37)
Percentage of educational institutions	0.001	(0.37)	-0.000	(-0.00)	0.013	(0.19)
Percentage of government agencies	0.001	(1.48)	0.001	(0.43)	-0.024	(-0.80)
Control variables						
Sex (female)	0.002	(0.17)	0.113 †	(1.66)	1.309	(1.40)
Age	-0.001 *	(-2.22)	-0.002	(-0.65)	-0.004	(-0.11)
Constant	0.153 †	(1.74)	3.001 **	(7.83)	21.170 **	(4.28)
R^{2} [a]	0.131 *		0.190 **		0.166 **	
Mean value of dependent variable (sd)	0.177	(0.05)	2.09	(0.23)	22.01	(3.23)
n (number of observations used per equation)	253		253		253	

a) ** = significant at the 1% level; * = significant at the 5% level; † = significant at the 10% level.
Source: own data collection and Statistics Netherlands.

Staff/child ratio

The analyses for the staff/child ratio show that few of the hypotheses can be confirmed. With respect to this variable, Hypothesis 6a can be confirmed: the staff/child ratio is higher in centers where the

decision-maker is faced with stronger norms with respect to quality. The staff/child ratio is also higher in centers where the decision-maker has more experience. The table also shows that for-profit centers have lower staff/child ratios than nonprofit centers. This means that centers that are more market-oriented provide lower quality care. Centers that are part of a national chain also have lower staff/child ratios than centers that are not part of such a chain. Both findings are in accordance with our hypotheses. The staff/child ratio is lower in day-care centers with older decision-makers.

Mean level of education

Day-care centers where decision-makers have more experience have a higher mean level of education among center staff, which confirms Hypothesis 8. Centers that have a diversity of tasks also have more highly educated staff members. This is, however, not in line with Hypothesis 11. Conversely, centers that have multiple outputs (scope) have staff members with less education on average. This too is not in line with what we expected (Hypothesis 13). Finally, the mean level of education is higher in centers that work from a pedagogical view, which confirms Hypothesis 14b, and in centers that have a female decision-maker.

Quality scale

The score on the quality scale is only affected by three factors. First, norms with respect to equity affect the score on the quality scale. In line with Hypothesis 6b is the finding that the stronger the equity norms of significant others, the lower the center's score on the quality scale. Second, also centers with diversity in tasks have a lower score on the quality scale, which confirms Hypothesis 10. Third, decision-makers of the largest centers (over 60 places) perceive their quality to be high. This partially confirms Hypothesis 12a.

6.3.3 Percentage of employer-financed and private places

Table 6.7 gives the results of the analyses that try to explain differences in the day-care center's percentage of employer-financed and private places.

TABLE 6.7 RESULTS OF OLS REGRESSION ANALYSES TO EXPLAIN THE PERCENTAGE OF EMPLOYER-FINANCED AND PRIVATE PLACES.

	DEPENDENT VARIABLES			
	PERCENTAGE OF EMPLOYER-FINANCED PLACES		PERCENTAGE OF PRIVATE PLACES	
INDEPENDENT VARIABLES	UNSTANDARDIZED COEFFICIENTS[a] (t-values)			
Decision maker				
Norms with respect to quality	-4.447 †	(-1.94)	3.485	(1.56)
Norms with respect to equity	3.909	(1.47)	-3.174	(-1.28)
Discretion (yes=1)	-0.002	(-0.00)	-1.101 *	(-2.23)
Mean level of education	1.535	(1.08)	-3.359 †	(-1.93)
Number of years experience	-0.049	(-0.08)	0.052	(0.11)
Organization				
Profit (yes=1)	-26.199 **	(-4.45)	39.969 **	(6.49)
Diversity (yes=1)	-6.656	(-1.14)	-4.453	(-1.19)
National chain (yes=1)	11.797 †	(1.75)	-2.420	(-0.47)
Size 1 (0-20 places) (*reference*)	-		-	
Size 2 (21-40 places)	-0.614	(-0.14)	-0.212	(-0.04)
Size 3 (41-60 places)	5.442	(0.93)	-1.515	(-0.28)
Size 4 (>60 places)	9.478	(1.57	-4.716	(-0.84)
Number of hours open	-0.951	(-0.29)	3.332	(1.10)
Scope (yes=1)	-2.752	(-0.77)	-4.071	(-1.31)
Background welfare	-0.409 *	(-2.13)	-0.251 *	(-2.08)
Pedagogical view (yes=1)	-1.366	(-0.34)	5.368	(1.54)
Environment				
Competition by formal suppliers (yes=1)	1.545	(0.28)	7.407	(1.56)
Competition by informal suppliers (yes=1)	-0.548 *	(-2.04)	0.184	(1.16)
Average per capita income ($*10^{-3}$)	1.634	(1.22)	-0.410	(-0.30)
Percentage of left-wing councilors	0.113	(0.68)	-0.035	(-0.26)
Percentage of female councilors	0.629 *	(2.35)	-0.361	(-1.40)
Percentage of educational institutions	0.928 †	(1.69)	-0.918 †	(-1.90)
Percentage of government agencies	0.082	(0.20)	-0.216	(-0.38)
Control variables				
Sex (female)	4.401	(1.02)	0.600	(0.12)
Age	0.199	(0.65)	-0.229	(-0.83)
Constant	-5.769	(-0.13)	44.928	(1.03)
$R^{2\ a)}$	0.285 **		0.571 **	
Mean value of dependent variable (sd)	50.24	(28.4)	23.47	(32.67)
n (number of observations used per equation)	218		218	

a) ** = significant at the 1% level; * = significant at the 5% level; † = significant at the 10% level.
Source: own data collection and Statistics Netherlands.

Level of the decision-maker

Norms with respect to quality have a negative effect on the percentage of employer-financed places, but no effect on the percentage of private places. This does not confirm Hypothesis 6a at all. We expected stronger norms with respect to quality to lead to a higher percentage of private places as well as a higher percentage of employer-financed places. Hypothesis 6b cannot be confirmed either: norms with respect to equity do not affect either percentage. Day-care centers where the decision-maker has more discretion have relatively fewer private places. This confirms Hypothesis 7. In centers where the decision-maker has a higher level of education, there is a lower percentage of private places. This partially confirms Hypothesis 8.

Level of the organization

For-profit centers have fewer employer-financed places and more private places than nonprofit centers. The large difference between for-profit and nonprofit centers, in this respect, indicates again that increasing the percentage of employer-financed places and increasing the percentage of private places are not the same strategy. Nonprofit centers increase the percentage of employer-financed places, whereas for-profit centers increase the percentage of private places. Diversity in tasks does not affect either percentage. Day-care centers that are part of a national chain have relatively more employer-financed places than centers that are not part of a national chain. The size of the organization does not affect the percentage of employer-financed or private places, nor does scope. Centers that are rooted in the welfare sector have relatively less employer-financed and private places. This means that these centers have relatively more subsidized places. This confirms Hypothesis 14a. Finally, whether or not the center adheres to a particular pedagogical discipline has no influence on the center's percentage of employer-financed and private places.

Level of the environment

Only competition by informal suppliers affects the day-care center's percentage of employer-financed places. However, the sign of the effects is negative whereas Hypothesis 15 predicted a positive sign. Hypothesis 15 must therefore be rejected. Average per capita income has, in contradiction to Hypothesis 16, no effect on the percentage of employer-financed or private places. Day-care centers in a municipality with relatively more female councilors have relatively more employer-financed places (Hypothesis 17). Finally, when there is more demand for day care by employers, as measured by the relative number of educational institutions in a municipality, there are relatively more employer-financed and fewer private places. This confirms hypothesis 18b.

6.3.4 Price of places

The results of the analyses that seek to explain differences in the prices of places in day-care centers are shown in Table 6.8.

Level of the decision-maker

Table 6.8 shows that, in accordance with Hypothesis 6b, prices are lower in centers where there are stronger norms with respect to equity. Apparently, day-care center decision-makers who operate in a setting in which accessibility of care is important are sensitive to pressure from their significant others not to increase prices too much. Norms with respect to quality do not have an effect on the price a center charges. Prices are higher (about NLG 1250 per year) in centers where the decision-maker has more discretion. The human capital variables do not affect prices. Hypothesis 6a, 7 and 8 are therefore not confirmed.

Level of the organization

In contrast to our expectation (Hypothesis 9), for-profit centers do not have lower prices than nonprofit centers. In line with Hypothesis 11 is the finding that day-care centers that are part of a national chain charge higher prices than centers that are not part of a national chain. Economies scale do not exist as far as price is concerned. The size of the organization does not affect the price of places. There are economies of scope: centers with multiple outputs have lower prices. Whether the center is rooted in the welfare sector and whether the center adheres to particular pedagogical principals also does not have an effect on day-care prices. Hypotheses 12-14 are therefore not confirmed.

Level of the environment

In contrast to our Hypothesis 15, more competition by formal and informal suppliers does not lead to lower prices. Prices are also not affected by average per capita income and the composition of the town council (Hypotheses 16 and 17). Demand by employers was expected to lead to lower prices. This appears to be partially true. The more demand for day-care by government agencies, the lower the price. Demand by educational institutions does not affect price.

TABLE 6.8 RESULTS OF OLS REGRESSION ANALYSES TO EXPLAIN THE PRICE OF DAY-CARE PLACES.

	DEPENDENT VARIABLE	
	PRICE OF PLACES [a]	
INDEPENDENT VARIABLES	UNSTANDARDIZED COEFFICIENTS [b]	(t-values)
Decision maker		
Norms with respect to quality	13.688	(0.92)
Norms with respect to equity	-19.313 *	(-2.34)
Discretion (yes=1)	3.591 *	(2.04)
Mean level of education	3.372	(0.54)
Number of years experience	0.235	(0.11)
Organization		
Profit (yes=1)	-23.297	(-0.94)
Diversity (yes=1)	-9.269	(-0.49)
National chain (yes=1)	104.603 **	(4.96)
Size 1 (0-20 places) (*reference*)	-	
Size 2 (21-40 places)	-1.663	(-0.08)
Size 3 (41-60 places)	2.156	(0.10)
Size 4 (>60 places)	36.308	(1.37)
Number of hours open	10.556	(0.89)
Scope (yes=1)	-25.310 †	(-1.74)
Background welfare	0.443	(1.04)
Pedagogical view (yes=1)	5.399	(0.36)
Environment		
Competition by formal suppliers (yes=1)	-30.686	(-1.24)
Competition by informal suppliers (yes=1)	-0.368	(-0.34)
Average per capita income ($*10^{-3}$)	0.494	(0.06)
Percentage of left-wing councilors	1.095	(1.48)
Percentage of female councilors	-0.119	(-0.09)
Percentage of educational institutions	3.842	(1.53)
Percentage of government agencies	-4.189 *	(-2.18)
Control variables		
Sex (female)	-20.938	(-0.65)
Age	0.843	(0.82)
Constant	1232.164 **	(7.16)
R2 b)	0.205 **	
Mean value of dependent variable (sd)	1437.8	(115.6)
n (number of observations used per equation)	253	

a) Guilders per fulltime place per month.
b) ** = significant at the 1% level; * = significant at the 5% level; † = significant at the 10% level.
Source: own data collection and Statistics Netherlands.

6.4 Summary and evaluation

In this chapter the hypotheses formulated to explain differences in day-care supply have been tested. First, differences in the supply in municipalities were analyzed using panel-regression analysis. Second, differences in the supply among day-care centers were analyzed using OLS regression analyses.

Day-care supply in municipalities

The analyses presented in this section indicate that the supply of day care in municipalities is affected by demand for day care by parents, municipalities, and employers (Research Question 1a). The results with respect to the effect of monetary and time constraints, norms, the availability of alternatives to formal day-care supply, and the composition of the town councils on day-care supply in municipalities confirm previous research findings. This study added demand for day care by employers to the explanatory factors. The results show that this makes sense. The municipality's level of day-care supply is also affected by the municipality's employment structure. Furthermore, the analyses show that the direct effect of demand for day care by parents on day-care supply is much larger than the indirect effect via the composition of the town council. Moreover, the results of the analyses indicate that the decentralization of policy and the public-private partnership has led to changes in the way day-care supply in municipalities is affected by demand by parents, municipalities, and employers (Research Question 1b). Day-care supply in municipalities is increasingly being affected by parental demand. Monetary and time constraints (parental income and the presence or absence of a partner) gained particular importance. Demand by municipalities, in terms of the percentage of left-wing and female councilors became a more important factor affecting day-care supply between 1989 and 1993. However, this effect is small, whereas a stronger increase had been expected. An explanation for this may be found in the increase in day-care supply between 1989 and 1995. In 1995 almost every municipality had created day-care facilities, whereas in 1989 only a few municipalities offered day care to their citizens. As a result, whether there are day-care facilities, and to a somewhat lesser extent the amount of day care, is less and less affected by the composition of the town council. The introduction of employer-financed day care has meant that day-care supply in municipalities is increasingly affected by employers demand.

Differences in supply among day-care centers

The analyses for differences in supply among day-care centers indicate that the transition from welfare to market affects day-care efficiency, quality, and accessibility (Research Question 2). Overall, the results of the analyses are somewhat mixed. The model was fairly well able to explain differences in efficiency, the percentage of employer-financed and private places, and prices. Differences in quality were harder to explain. A reason for this might be that there is less variation in the quality variables (also see Table 4.9). In itself it is, of course, quite comforting that not much variation in quality was found, but it makes explaining differences in quality difficult.

The first set of Hypotheses (6-8) related factors at the level of the day-care center decision-maker to differences in supply among day-care centers. We expected the behavior of day-care center decision-makers, resulting in the supply of day-care centers, to be affected by the norms of the decision-makers significant others with respect to quality and equity. The results show that the effect of norms on day-care supply cannot be neglected. Decision-makers who are faced with stronger quality norms have higher staff/child ratios and relatively fewer employer-financed places in their day-care centers. Norms with respect to equity also affect day-care supply. Prices of day-care places are lower in centers with stronger equity norms. Moreover, day-care center decision-makers report lower levels of perceived quality when the norms with respect to equity are stronger. Decision-makers do not feel that they can realize high quality care when the normative pressure with respect to equity is high. Day-care centers differ in the amount of discretion they offer to their decision-makers. Day-care center decision-makers who have more discretion are expected to realize a higher degree of efficiency. This would subsequently be translated into higher quality, relatively fewer employer-financed and private places, and lower prices. For the most part, this appears not to be the case. More discretion only leads to relatively fewer private places and to higher prices rather than lower prices. Next, two human capital variables are distinguished: the level of education of the decision-maker and the number of years of experience he or she may have. The analyses show that, in contrast to what was expected, centers where decision-makers have a higher level of education are less efficient (price-quality ratio) and have relatively fewer private places. The number of years of experience only affects quality. In centers with more experienced decision-makers the staff/child ratio and the mean level of education of center staff are higher.

Level of the organization

The next set of Hypotheses (9-14) related organizational characteristics to differences in day-care supply among centers. The evaluation of the results for the profit variable (Hypothesis 9) will be skipped here, as they will be discussed below (the transition from welfare to market). We also expected to be able to explain differences in day-care supply among centers by looking at whether or not day care is the day-care center's core business. It turned out that only the mean level of education and the score on the quality scale are lower in centers with diversity. Centers that are part of a national chain are less efficient than centers that are not part of a national chain. Moreover, such centers also have lower staff/child ratios, relatively more employer-financed places, and they charge higher prices too. Next, we expected to find economies of scale and scope. Centers with larger number of children, with longer opening hours, and centers with multiple outputs are expected to be more efficient. However, no economies of scale in the production of day-care services were found. On the contrary, larger centers (over 20 places) are less efficient than the smaller centers (up to 20 places) i.e. there are diseconomies of scale. The analysis for day-care efficiency (price-quality ratio) showed that there are economies of scope. Centers with multiple outputs are more efficient than single-output centers. Prices are also lower in centers with multiple outputs. However, we also found that these centers have, on average, staff with a lower level of education. The last two factors at the level of the organization are whether the center is rooted in the welfare sector and whether it adheres to particular pedagogical principals. Both factors do not affect many of the dimensions of day-care supply distinguished here. Notable is the finding that centers rooted in the welfare sector

are more efficient.[81] In addition, the percentage of employer-financed as well as the percentage of private places are higher in centers that are rooted in the welfare sector. Whether the center adheres to pedagogical principals or not is only reflected in the higher mean level of education of center staff.

Level of the environment

The final set of Hypotheses (15-18) relates factors at the level of the environment to day-care supply. Also here the discussion of the results for two variables (competition by formal and informal suppliers) are skipped because they will be discussed below. The analyses show that the average income of parents in municipalities affects efficiency (a higher degree of occupancy) and quality (a lower mean level of education of center staff). The composition of the town council does not affect day-care supply much. Only the percentage of employer-financed places is higher in municipalities with a higher percentages of female councilors. The percentage of left-wing councilors does not affect any of the variables. We also found modest effects of the municipality's employment structure. The higher the percentage of government agencies, the better the price-quality ratio, but the lower the degree of occupancy. Prices are also lower in municipalities where the employment structure consists of a relatively large number of government agencies. The more educational institutions in a municipality, the higher the percentage of employer-financed places and the lower the percentage of private places.

Transition from welfare to market

In Research Question 2 we asked ourselves how the transition from welfare to market in the second half of the 1990s affects differences in day-care supply among day-care centers. The profit and the competition variables tell us something about how the transition from welfare to market might affect day-care supply. The results of the analyses show that for-profit centers are more efficient in terms of the degree of occupancy, that they have lower staff/child ratios, and that they have relatively fewer employer-financed and relatively more private places. Whether the center is for-profit or nonprofit does not affect efficiency as measured by the price-quality ratio nor does it result in lower prices. Competition by formal suppliers does not affect day-care supply at all. Competition by informal suppliers only results in a lower percentage of employer-financed places. So, more commercialization in the day-care market can be expected to lead to more efficiency (a higher degree of occupancy), lower quality of care (staff/child ratio), and relatively fewer employer-financed places.

[81] However, only with respect to the price-quality ratio, not with respect to the degree of occupancy.

Chapter 7

Summary and conclusion

7.1 Summary

7.1.1 Research questions

The Netherlands has witnessed a considerable increase in the use of child care in recent years. There has been a particular increase in the use of day-care centers by pre-schoolers (children under the age of four). Several reasons can be put forward to explain this, such as increased labor-force participation by women, changing attitudes towards the use of child care, a decreased availability of relative care, and the increased availability of institutionalized child care. However, increases in supply were not sufficient to meet demand. Therefore, the policy of the Dutch government in the first half 1990s aimed at increasing the supply of child care in day-care centers, via the Stimulative Measures on child care.

The Stimulative Measures were set up as a public-private partnership (government and employers). Employers were given an important role in the Stimulative Measures, via the so-called employer-financed places. According to government plans, employers would have to finance the greater proportion of the increases needed in the supply of day-care. The involvement of employers seems to be reasonable, as they too profit from the increased amount of female labor supply. There are, however, some important (negative) side-effects of employer financed child care. It can, for example,

be assumed that in sectors where employers are not as dependent on female workers, less child care will be financed. Also employers might only finance child care for more highly educated employees.

In addition to the increased involvement of employers, the decentralization of policy from the central to local government was an important aspect of the Stimulative Measures on child care. As a result, child care increasingly became the responsibility of municipalities and this had consequences for differences in the availability of child care between municipalities. The Stimulative Measures turned out be successful in increasing the supply of day care. Between 1989 and 1995, day-care supply increased from 20,100 to 65,600, i.e. an increase of 226%. The increase in employer-financed child care was responsible for 90% of this growth. Developments in day-care supply and policy with respect to day care in the period 1989-1995 led to the following research questions:

Research question 1

a. How can the aggregate day-care supply in municipalities be explained by the demand for day care by parents, Town Councils, and employers?
b. How does the relative influence of demand for day care by parents, Town Councils, and employers on the aggregate day-care supply in municipalities change over time?

The Stimulative Measures on child care ended after 1995. The falling away of these measures implied a transition from the welfare sector to the market sector. This transition is in line with government policy in recent years which has been characterized by a withdrawal of the collective in favor of the market sector. Day-care center decision-makers have now become social entrepreneurs contracting for money. Commercialization of the child-care sector is supposed to lead to increased efficiency, but it can also be expected to reduce the quality and accessibility of day care. This lead to our second research question.

Research question 2

> How does the transition from welfare to market affect differences in efficiency, quality, and accessibility of supply among day-care centers?

7.1.2 The child-care market

The child-care market is a special market. Child-care services are multidimensional and provided by a heterogeneous group of providers. These and other features of the child-care market cause market imperfections. Market imperfections can be a reason for governments to intervene in a market. However, the interventions by government are also not perfect. It may cause government imperfections.

There are three important causes of market imperfections in the child-care market: monopolistic competition, information asymmetry, and externalities. Monopolistic competition will make prices

higher and the size of the supply smaller than would have been the case in a situation of pure competition. Information asymmetry between consumers and providers engenders a tendency towards moral hazard and adverse selection. Both tend to reduce the supply and lower the quality. An important positive externality of the child-care market is increased female labor force participation. Individual suppliers are not necessarily guided by such motives, which means that less child care will be provided than would be desirable from a societal point of view. Next to these market failures, equity concerns may also be a reason for governments to intervene in a market. In the child-care market equity pertains to accessibility and an equitable distribution of clients. Barriers to access may be found in availability of places and in prices of child care. Two sources of government imperfections are distinguished: the disjunction between costs and revenues and information asymmetry. The absence of a link between costs and revenues is a major source of government failure. In such a situation more resources than necessary may be used to produce a certain output. Information asymmetries may even amplify these inefficiencies. Managers have an informational advantage over their principals, which enables them to pursue their own interests.

Therefore, ideally government intervention should, address market imperfections, equity concerns, as well as government imperfections. There are three general ways in which a government can intervene in a market: regulation, subsidization or taxation, and provision. Regulation should prevent the entrance of low-quality providers into the market, and prevent adverse selection and moral hazard. Subsidies can either be given to consumers or providers. Consumer subsidies primarily improve the accessibility of care, whereas provider subsidies are mainly an instrument to increase day-care supply and to improve quality. Provision by government should be considered when parents are not very price responsive in their demand for their child's early education. Government imperfections are addressed by two generic policies: decentralization and privatization. Contracting out of services and public-private partnerships are examples of decentralization policy.

7.1.3 Explaining day-care supply

Two theoretical models were developed to explain day-care supply. The first model tries to explain day-care supply in municipalities (Research Question 1). The second model tries to explain differences in supply among day-care centers, thereby focussing on efficiency, quality, the percentage of employer-financed and private places, and prices (Research Question 2).

Day-care supply is assumed to be demand induced. Three parties demanding day care can be distinguished: parents, municipalities (town councils), and employers. Demand for day care by parents is expected to be dependent on monetary and time constraints, norms, as well as the availability of alternatives to formal day care. The costs of child care are affected by the number of children parents have. The more children parents have, the higher the total costs of day care as the cost of care is quoted on a per-child basis. It can therefore be assumed that less day care will be demanded (and subsequently supplied) with an increasing number of children up to four years per family (Hypothesis 1a). Parental income is also expected to affect demand for day care: the higher parental income, the more day care will be demanded and - according to our hypothesis - also

supplied (Hypothesis 1b). Next, two time constraints are distinguished: the presence or absence of a partner and the distance parents have to travel to a day-care center. Single parents have a greater need for day care than non-single parents. If they want to get a job or attend classes they have to rely on day care (either formal or informal). We therefore expect that more day care will be supplied in municipalities where there are relatively more single parents (Hypothesis 1c). The distance to a day-care center can also be expected to affect day-care supply. The closer parents live to a day-care center, the lower the time costs, and the more day care will be demanded and supplied (Hypothesis 1d). Norms with respect to the use of day-care centers can also be expected to affect parents' demand for day care. It can be expected that the more modern the norms with respect to the use of day-care centers are, the more (formal) day care will be demanded and supplied (Hypothesis 1e). Finally, it can be expected that if there is less informal day-care supply in a municipality, there will be relatively more demand for formal day care (Hypothesis 1f). Demand by municipalities is expected to be affected by the composition of the town council. Choices about the allocation of a municipality's budget are made by the town council. Left-wing and female councilors are assumed to be more interested in expanding day-care supply. Therefore, it can be expected that day-care supply is higher in town councils with a relatively large number of left-wing and female councilors (Hypotheses 2a and 2b). In sectors where relatively many (highly skilled) women are employed, employers can be expected to offer more day-care facilities to their employees. Research showed that the government (as employer) and companies in the non-commercial services sector offer a relatively large amount of day-care facilities to their employees. Day-care supply in municipalities can therefore be expected to be higher, the higher the percentage of government agencies in a municipality (Hypothesis 3a), and the higher the percentage of educational institutions in a municipality (Hypothesis 3b). Moreover, demand for day care by parents may affect day-care supply in municipalities indirectly. Parents (voters) may exert pressure on local left-wing and female politicians to create day-care facilities or to increase existing day-care supply. The factors related to demand for day care by parents may therefore not only directly affect day-care supply (Hypotheses 1a-1f), but also indirectly (Hypotheses 4a-4f). These factors can be expected to affect the composition of the town council, which in turn affects day-care supply in a municipality.

The increased involvement of employers, as a result of the public-private partnership, and the decentralization of policy can be expected to lead to changes in the effects of demand by parents, municipality, and employers on day-care density (Research Question 1b). Parental income will probably become more important because employers can be expected to shift part of the costs to parents, by offering day care mainly to high income parents (Hypothesis 5a). Due to a change in policy, the relative number of single parents is expected to become a more important factor affecting day-care supply in municipalities as of 1994, after a period in which it is expected to have become less important (Hypothesis 5b). The decentralization of policy is expected to make the composition of the town council more important at first, but as the involvement of employers in the day-care sector increases, this will gradually be countered by an increase in the importance of employer and parent demand (Hypotheses 5c and 5d). Finally, due to the increase in employer-financed child care, demand by employers is expected to become a stronger factor affecting day-care supply in municipalities (Hypotheses 5e and 5f).

We will now try and explain the differences in supply among day-care centers. More specifically, the theory developed here tries to explain differences in efficiency, quality, the percentage of employer-financed and private places, and prices. This allows us to answer Research Question 2, which aims at analyzing the effect of the transition from welfare to market (i.e. more commercialization) on day-care supply. Whether the center is nonprofit or for-profit (Hypothesis 9) and whether there is competition on the local market (Hypothesis 15) runs parallel to commercialization. For-profit centers are assumed to be more market-oriented than nonprofit centers. And, on the local market where there is (more) competition, there is more commercialization. Thus, the effects these two factors will have on day-care supply will tell us how commercialization affects day-care supply.

The falling off of day-care subsidies gave day-care centers an incentive to decrease their expenses and/or increase their revenues. Costs can be reduced by either producing more efficiently or by decreasing quality. More revenue can be generated by creating more employer-financed places or by increasing prices in general. To be able to explain which combination of options will be chosen (i.e. what the decision-maker's behavior will be), and thus differences in supply among centers, a constraint-driven approach is used. Lindenberg's social production function theory has been employed here. This theory focuses on the individual, in this case the day-care center decision-maker. The behavior of the decision-maker is explained from the perspective of the confrontation between the decision-maker's (ultimate) goals and the restrictions she faces. As the ultimate goals are assumed to be stable and the same for everyone, differences in behavior are explained from differences in restrictions. The restrictions of day-care center decision makers are found at three levels: the level of the decision-maker, the level of the organization, and the level of the environment. Hypotheses are derived for the factors at the three levels. Norms with respect to quality and equity of significant others are restrictions at the decision-maker level. The decision-maker will try to conform to the norms of significant others as this will give her social approval. Stronger norms with respect to quality will have an upward pressure on quality. In turn, increased quality will have an upward pressure on prices, the percentage of employer-financed places, and efficiency (Hypothesis 6a). Stronger norms with respect to equity will have a downward pressure on the percentage of employer-financed places and prices. This, in turn, will have a downward pressure on quality and an upward pressure on efficiency (Hypothesis 6b). Day-care center decision-makers can differ in the amount of discretion they have. The more discretion a decision-maker has, the higher efficiency, the higher quality, the lower the percentage of employer-financed and/or private places, and the lower prices (Hypothesis 7). Moreover, the more human capital a decision-maker has, he or she can be expected to achieve his or her goal more effectively and with higher efficiency. In turn, this higher level of efficiency can be used to improve quality, lower prices, and/or achieve a lower percentage of employer-financed and/or private places (Hypothesis 8).

Whether the center is nonprofit is an important restriction at the level of the organization (Hypothesis 9). Nonprofit centers have less incentive to produce efficiently, compared to their for-profit counterparts. Non-profit centers can therefore be assumed to be less efficient than for-profit centers. Moreover, non-profit centers are known to supply care of higher quality and to have more publicly accessible places than for-profit centers. Quality and the percentage of employer-financed places will therefore be higher in non-profit centers. This will have an upward pressure on prices.

Whether or not a center has a diversity of tasks also operates as a restriction. A center has diversity in tasks if they have other activities than child care. Most of the centers with diversity in tasks are welfare organizations. They are assumed to have a primary interest in making care accessible, thus moderate prices and not too many employer-financed places. This will have an upward effect on efficiency and a downward effect on quality (Hypothesis 10). Decision-makers of centers that are part of a national chain have little discretion. These decision-makers are expected to have fewer incentives to produce efficiently. In turn, this has an upward effect on price and a downward effect on quality. The effect on the percentage of employer-financed places is difficult to predict, as the national chains are probably a large contracting party for employers, but also for municipalities (Hypothesis 11). Next, economies of scale and scope can also positively affect the day-care center's efficiency. Larger centers and centers with multiple outputs are supposed to be more efficient than smaller centers and centers with a single output. This may result in higher quality, a lower percentage of employer-financed and/or private places, and lower prices (Hypotheses 12-13). The final two factors at the level of the organization are whether the center has a background in welfare and whether the center works from the perspective of pedagogical principals. Centers that have a background in welfare stem from a time when the accessibility of care was considered important. Thus a downward pressure on the percentage of employer-financed places and prices can be expected. In turn, this will have a downward pressure on quality and an upward pressure on efficiency (Hypothesis 14a). Centers working from a pedagogical perspective can be assumed to show more interest in day-care quality. This has an upward effect on efficiency, price, and the percentage of employer-financed places (Hypothesis 14b).

The presence or absence of competition is the first restriction at the level of the environment. In general, competition can be expected to have an upward pressure on efficiency and a downward pressure on prices. In turn, this will have a downward pressure on quality and an upward pressure on the percentage of employer-financed places (Hypothesis 15). Higher average per capita income will make it less necessary for centers to produce efficiently. In addition, parents with higher incomes will be able to purchase higher quality care. As employers are more willing to arrange day care for their higher income employees, relatively more employer-financed places will become available in municipalities where average per capita income is higher (Hypothesis 16). Centers that are supported by a municipality via subsidies, i.e. municipalities with town councils consisting of a relatively large number of left-wing and/or female councilors, are less under pressure to produce efficient. This can be compensated for by charging higher prices, decreasing quality or increasing the percentage of employer-financed places. But, since the subsidies can also be used to increase quality or improve accessibility, the net effect on quality, the percentage of employer-financed places, and prices is difficult to predict (Hypothesis 17). Finally, demand by employers will have an upward pressure on the percentage of employer-financed places and a downward pressure on prices. This will, in turn, have an upward effect on efficiency and a downward effect on quality (Hypothesis 18).

7.1.4 Data

Two data sets are used to test the hypotheses put forward in this study. First, a data set from SGBO and data by Statistics Netherlands were used to test the hypotheses relating to differences in the amount of day care supplied by municipalities. The data set from SGBO holds data on day-care supply (the number of places) in Dutch municipalities between 1989 and 1995. Added to this are demand data from Statistics Netherlands. The demand data concern demand by parents, municipalities, and employers. Second, data had to be collected to test the hypotheses relating to differences in supply among day-care centers. These data were collected via a questionnaire that was sent to all Dutch day-care centers listed in the phone book (N=1943).82 After five reminders, the rate of response to the questionnaire was 30% (N=469). Analysis of the selectivity of the response showed that the day-care centers in our data are a fair representation of the population. However, there was an over-representation of centers belonging to an umbrella organization with multiple activities and an under-representation of centers belonging to an umbrella organization with day-care as the only activity.

Day-care supply in municipalities is operationalized as day-care density, the number of places in day-care centers per 1000 children up to four years in a municipality. Demand for day care by parents is operationalized in terms of monetary constraints, time constraints, norms, the availability of informal supply. Monetary constraints are operationalized as the number of children under the age of four per family and average per capita income. Time constraints are operationalized as the percentage of households made up of one-parent families and population density (number of people per km2, reflecting the average distance to a day-care center). Norms are operationalized as the mean level of education. Availability of informal supply is operationalized as one divided by the number of children up to three years. The percentage of left-wing councilors is operationalized as the percentage of councilors coming from PvdA, D'66, Groen Links, or local left-wing parties. The percentage of female councilors is the percentage of all councilors who are female. Demand by employers is (for this part of the study) measured by the percentage of jobs in non-commercial services.

In analyzing differences in supply among day-care centers five indicators of supply were used: efficiency, quality, the percentage of employer-financed and private places, and prices. Efficiency is first measured by a variable defined as price divided by quality (the price-quality ratio). The second measurement of efficiency is the degree of occupancy. Quality is measured by three variables: the staff/child ratio, the mean level of education of staff members, and by the score on a scale that measures the degree to which a number of quality indicators can be realized. The operationalization of the percentage of employer-financed and private places is straightforward: the numbers of these respective places divided by all places. Price is measured by the selling price of places. Norms of significant others with respect to quality and equity that the decision-makers has to take into consideration are measured via two propositions one of which refers to quality and the other relating to equity. The significant others are: parents of children in the day-care center, employers (hirers of employer-financed places), the council of the municipality (hirers of subsidized places), staff

[82] We also sent a questionnaire to directors of umbrella organizations. These data were not used in the analyses, because the number of returned questionnaires was too small.

members within the day-care center, and the management of the day-care center's umbrella organization. We asked the decision-makers to score the degree to which the significant others, in her opinion would agree to the two propositions. The variables reflecting the restrictions at the level of the organization are fairly straightforward. Competition by formal suppliers is measured by a dummy variable indicating whether or not there is more than one day-care company in the municipality. The operationalizations of the other variables at the level of the environment are the same as for the analyses of day-care supply in municipalities.

7.1.5 Results

Day-care supply in municipalities

The amount of day care that is supplied in a municipality can indeed be explained by demand for day care by parents, municipalities, and employers (Research Question 1a). Panel regression analysis shows that the Hypotheses 1-3 can, by and large, be confirmed although two hypotheses (1a and 1e) could not be tested using panel regression analysis. To test these hypotheses, which relate the number of children under the age of four per family and norms to day-care supply, OLS regression analyses were performed for 1995 only. The results show that the number of children per family does not affect day-care supply in municipalities and that norms do. The more modern norms are, the more day care is supplied. However, in contrast to the panel regression analysis, we no longer find an effect of the distance to a day-care center and the availability of informal supply on day-care supply. Moreover, the results of the analyses indicate that demand for day care by parents is a stronger determinant of day-care supply than demand for day care by municipalities or employers. Parental income, the distance parents have to travel to a day-care center, and the relative number of single parents influence day-care supply in municipalities. The analyses also show that demand for day care by parents only has a small indirect effect on day-care supply. Although most of the effects of demand for day care by parents on the percentage of left-wing and female councilors are significant (thereby confirming most of the Hypotheses 4a-4f), they do not contribute much to the direct effects of demand for day care by parents on day-care supply.

The results of the panel regression analyses indicate furthermore that, due to the decentralization of policy and the public-private partnership, demand for day care by parents (parental income and the relative number of single parents) became a stronger determinant of day-care supply in municipalities between 1989 and 1995. This confirms Hypothesis 5a and (partially) Hypothesis 5b. In line with our expectation (Hypotheses 5c and 5d), we found an initial increase in the effect of demand for day care by municipalities on day-care supply (1989-1993). However, the predicted subsequent decrease in these effects was not found. Thus, Hypotheses 5c and 5d are only partially confirmed. The introduction of employer-financed day care has meant that day-care supply in municipalities is increasingly being affected by employer demand. This confirms Hypotheses 5e and 5f.

Differences in supply among centers

Differences in efficiency, quality, the percentage of employer-financed and private places, and prices of day-care centers are analyzed using OLS regression analyses. In the analyses we control for the clustering of day-care centers in municipalities, using robust estimators of variance.

The results show that norms affect day-care supply (Hypotheses 6a and 6b). Decision-makers who are faced with stronger quality norms have a higher level of efficiency (price-quality ratio), a higher staff/child ratio, relatively fewer employer-financed places and relatively more private places at their day-care centers. Moreover, the perceived quality and prices of day-care places are lower in centers with stronger equity norms. The amount of human capital, as measured by the level of education of the decision-maker and the number of years experience, a decision-maker affects some of the elements of day-care supply (Hypothesis 7). In contrast to what we expected (Hypothesis 8), decision-makers who have more discretion do not realize a higher degree of efficiency, more quality, and lower prices in their center. Instead, more discretion leads to higher prices and to relatively fewer private places. Also, in contrast to what we expected, centers whose decision-maker has a higher level of education are less efficient (price-quality ratio) and they have relatively more private places. The number of years experience only affects quality. In centers with more experienced decision-makers the staff/child ratio and the mean level of education of center staff are higher. Day-care centers whose core business is not day care (Hypothesis 10) have a lower mean level of education and a lower score on the quality scale. Centers that are part of a national chain (Hypothesis 11) are less efficient than centers that are not part of a national chain. Moreover, such centers also have lower staff/child ratios, relatively more employer-financed places, and they charge higher prices too. We did not find economies of scale in the production of day-care services (Hypothesis 12). In contrast, we found that larger centers (over 20 places) are less efficient than the smaller centers (up to 20 places), i.e. there are diseconomies of scale. Economies of scope do exist (Hypothesis 13). Centers with multiple outputs are more efficient than single-output centers. Whether the center is rooted in the welfare sector and whether it adheres a particular pedagogical point of view do not affect many of the dimensions that have been identified as affecting day-care supply (Hypothesis 14a and 14b). Centers rooted in the welfare sector are more efficient and have a higher percentage of employer-financed as well private places. Staff at centers that adhere to particular pedagogical principals have a higher mean level of education. The average income of parents in municipalities (Hypothesis 16) affects efficiency (a higher degree of occupancy), quality (a lower mean level of education and a higher score on the quality scale), and the percentage of employer-financed places (higher). The percentage of left-wing councilors does not affect any of the variables (Hypothesis 17a). Day-care centers in municipalities with a higher percentages of female councilors have a higher score on the quality scale and a higher percentage of employer-financed places (Hypothesis 17b). Finally, we found that the higher the percentage of government agencies (Hypothesis 18a), the higher efficiency in terms of the price-quality ratio, but the lower in terms of the degree of occupancy. Also, prices are lower in municipalities where the employment structure consists of a relatively large number of government agencies. The more educational institutions in a municipality (Hypothesis 18b), the higher the percentage of employer-financed places, the lower the percentage of private places, and the higher the score on the quality scale.

Hypotheses 9 (for-profit versus non-profit) and 15 (competition) allow us to answer the second research question: how did the transition from welfare to market in the second half of the 1990s affect differences in day-care supply among day-care centers. The analyses show that for-profit centers are more efficient in terms of the degree of occupancy, that they have lower staff/child ratios, and that they have relatively fewer employer-financed places and relatively more private ones. Whether the center is for-profit or is non-profit does not affect efficiency as measured by the price-quality ratio nor does it result in lower prices. Competition by formal suppliers does not affect day-care supply at all. Competition by informal suppliers only results in a lower percentage of employer-financed places. Thus, the transition from welfare to market (i.e. more commercialization in the day-care market) can be expected to lead to more efficiency (a higher degree of occupancy), a lower quality of care (staff/child ratio), relatively fewer employer-financed places, and relatively less employer-financed places.

7.2 Conclusion, discussion, and implications for policy

In this section we evaluate the results of the study and discuss its implications for future research and policy with respect to child care. Earlier research into day-care supply in municipalities was limited to a static analysis of how demand for day care by parents and municipalities affects day-care supply (Gustafsson & Stafford, 1992; Van Dijk et al., 1993). In this study we added demand for day care by employers to the explanation of day-care supply in municipalities, because of the strong increase in employer-financed day care. Including demand for day care by employers has provided interesting insights. The analyses show that the more day care is demanded by employers, the more day care is supplied in municipalities. The increased importance of employer-financed day care has made day-care supply in municipalities more dependent on the municipality's employment structure. Moreover, employer-financed child care created a polarization between parents who are offered an employer-financed place in a day-care center and parents who cannot access such a place either because they do not work or because their company does not offer child care to the employees. This division in employer-financed and other places in the day-care sector is in contrast to the Dutch health care sector, for example, where recent plans to give employees priority in health care met with considerable resistance.

The results with respect to demand for day care by parents and municipalities are, by and large, in line with findings from previous research in the Netherlands. Monetary and time constraints affect the choices parents make with respect to day care. In addition to the demand for day care by employers, norms relating to the use of day care and the availability of informal day care were also introduced in this study in order to be better able to explain day-care supply in municipalities. The results of the analyses do not enable us to draw clear conclusions about the effect of norms and the availability of informal day care. In the panel analysis (1989-1995) which took norms into account, more day care in municipalities is supplied when there is more informal day-care supply available. However, in the analysis that included norms (1995 only), the availability of informal supply does not affect formal day-care supply in municipalities. Norms on the other hand do. Differences in the

results can either be attributed to difference in the method of analysis or difference in the years under consideration. Future research could shed more light on this matter. Demand for day care by municipalities affects day-care supply in municipalities, except for 1989. This is in contrast to findings by Van Dijk et al. (1993). An explanation for this might be that they used a different data set for day-care supply. Also differences in the method of analysis (tobit analysis versus panel analysis) may account for the difference. Moreover, in this study we were able to analyze changes in the effects of demand for day care by parents, municipalities, and employers on day-care supply in municipalities. We showed that the public-private partnership and the decentralization of policy have led to a considerable shift in the financial burden from municipalities and employers to parents (also see Mutsaers, 1997). The analyses suggest that, in relative terms, day care has become increasingly less accessible to low-income parents. This is in line with what Maassen van den Brink and Groot (1996) also found. They observed that the users of day care are increasingly found in the higher income categories. A possible consequence of this might be a polarization in the whole day-care sector: a private sector for children of high-income parents and a subsidized sector for lower-income parents (Emancipatieraad, 1997, p.7; also see SER, 1998, p.100). Future research may focus on this in more detail: what are the differences in access to day care for members of different social strata and how has policy affected this?

The sections of this study that are concerned with trying to explain differences between the supply offered by day-care centers differs from previous studies in several respects. First, in this study we acknowledge the multidimensional character of day care by simultaneously analyzing differences in several elements of day-care supply. Most studies have only focus on one or two elements of day-care supply, such as efficiency, costs, and/or quality. Not taking into account the different elements of day-care supply can lead to incorrect conclusions. One might, for example, conclude that commercialization only has a negative effect when quality and accessibility of care are considered but that commercialization does not effect efficiency. A second distinctive element of this study is the use of the social production function approach, which combines insights from sociology and economics in the construction of the explanatory model. Most other studies into differences in supply among day-care centers have used an econometric approach (mainly consisting of estimating cost functions) in which the only assumption is that certain factors, known from previous research, affect day-care supply. No underlying theoretical notion of the individual behavior is used. In contrast, in these studies a relatively substantial amount of attention is paid to the empirical specification of models that are based on rather simple behavioral assumptions or even no behavioral assumptions at all. An explicit consequence of using the social production function approach is the inclusion of norms in the explanation of day-care supply. In an industry where complex personal services are supplied, norms can be expected to affect the behavior of decision-makers. The results show that the norms the day-care center decision-maker's significant others have with respect to quality and equity indeed affect the decision-maker's behavior and, as a result, the supply offered by the day-care centers. In turn, norms relating to quality and equity may also affect the degree to which a day-care center can make the transition from welfare to market. On the one hand, norms may put a limit on the degree to which a day-care center decision-maker can be a social entrepreneur. For example, decision-makers who want to make innovations in how children are cared for may face (strong) normative resistance against making such innovations. But on the other

hand, it may also prevent day-care center decision-makers from lower quality and accessibility in favor of more profit.

This part of the study could be improved in general by more in-depth data collection. For example, data on the financial administration of day-care centers would allow us to make a calculation of the cost price of day care. This would mean we would not have to use selling price as a proxy. Moreover, observations in classrooms would enable us to measure process quality, which captures the experiences children have of child care (Helburn et al., 1995). The indicators of structural quality showed little variation, which makes it difficult to explain differences in quality. There might be more variation in process quality. Also data on the income of parents using a certain day-care center could tell us more about the accessibility of care.[83]

The results of this study may have implications for the policy of the Dutch government with respect to day care. What do the results of this study imply as far as future policy is concerned?

Should the government encourage further involvement by employers in the day-care sector? If the government wants to achieve an equitable distribution of day-care places among parents, it should not encourage a further involvement of employers in day care, at least not without simultaneously subsidizing day-care places for low-income parents. This study showed that, as a result of the introduction of employer-financed child care, day-care supply in municipalities became much more dependent on parental income. This means that day care became less accessible for low-income parents. If, however the government wants to further increase day-care supply at relatively little cost, then it should encourage a further involvement of employers in day care. The larger part of the increase in day-care supply in the 1990s can be attributed to employer-financed day care. As a result more publicly accessible places also became available, although to a lesser extent.

Should the government subsidize child care or should it stimulate further commercialization? If the government wants day-care centers to be more efficient, then it might stimulate further commercialization. This study indicates that commercialization has a positive effect on the efficiency of day-care centers. However, if the government wants to secure the quality and accessibility of day care, it should not stimulate further commercialization. This study shows that commercialization also leads to care that is of lower quality and less accessible. Moreover, there are imperfections in the day-care market (monopolistic competition, information asymmetry, and externalities). These imperfections imply that if child care was left to the market alone, less child care would be provided than would be desirable from a social point of view and that there would be a downward pressure on the quality of the child care. Other objections against increased commercialization are lack of competition in the local market (MDW, 1996, p.17) and the current poor insight that subsidized centers have into the cost structure (Moret Ernst & Young, 1996). Day-care center decision-makers often do not know how to keep costs down and what is a good price, although the introduction of employer-financed child care and the changed relationship with the municipalities has led to some improvement in this respect (MDW, 1998, p.19). Moreover, commercialization presupposes that (well-informed) parents can choose from an ample supply. Given the current shortages in the day-care

[83] We asked for this in the current questionnaire but most day-care centers were not able to retrieve this information.

sector, parents in fact have little to choose. Also, there are considerable transaction costs (for parents as well as the child) involved if parents decide to switch day-care centers. Furthermore, relatively fewer day-care places were created in the period 1995 and 1998 than in the period 1989-1995. For many reasons, it can be concluded that pushing commercialization in the day-care sector does not seem appropriate if quality and accessibility are important goals.

In 1999 the government started a new Stimulative Measure on child care. The objective of the government was to increase the number of child places to 150,000 in 2002 (Ministerie van VWS, 1999). An initial amount of NLG 75 million became available in 1999. Of this amount NLG 25 million consisted of fiscal subsidies and NLG50 million was made available to increase the number of places. This amount will be increased to NLG 400 million in the year 2002. Analyses by Graafland (1999) indicate that, when compared to abolishing day-care subsidies, this policy would result in lower prices, higher labor force participation, and an increase in labor supply. However, according to the Emancipation Council (1997, p.8) this projected increase in the number of places is still not enough to meet demand. They estimated that a further increase to 215,000 places in 2010 is needed if waiting lists are to be cleared. The direction Government policy will take after 2002 is still being discussed. The Ministry of VWS wants to make day care a basic provision, but parliament wants to stop subsidizing day-care centers after 2002 and to subsidize consumers instead (Volkskrant, 25 November 1999). This would (again) increase commercialization in the day-care market. This present study indicates that such a move would have a downward pressure on day-care quality and accessibility, and an upward pressure on efficiency.

Appendix A

Supplementary Tables to Chapter 4

Data on day-supply in municipalities

The data on the number of day-care places in a municipality, which was needed to construct the dependent variable day-care density, is obtained from SGBO, the research bureau of the *Vereniging Nederlandse Gemeenten* (VNG).[84] Table A1 indicates the full contents of this data set (see Mutsaers (1997) for more detailed information).

TABLE A1. SGBO DATA ON DAY-CARE SUPPLY IN MUNICIPALITIES, 1989-1995.

	1989	1991	1993	1995
Day-care centers				
Subsidized	yes	yes	yes	yes
Non-subsidized	yes	yes	yes	yes
Number of places				
Full-time	yes	yes	yes	yes
Part-time	yes	yes	yes	yes
Employer-financed	yes	yes	yes	yes
Number of children	yes	yes	yes	yes
Degree of occupation	yes	yes	yes	yes
Number of staff-members	yes	yes	yes	yes
Finances	no	no	yes[1]	yes[1]
Number of municipalities in survey	643	600	632	530
Number of municipalities in the Netherlands	702	647	646	633

[1]: The finances of non-subsidized day-care centers are estimated.

[84] VNG/SGBO, PO Box 30435, 2500 GK The Hague, The Netherlands.

TABLE A2. DATA SOURCES OF VARIABLES FOR ANALYSIS OF DAY-CARE SUPPLY IN MUNICIPALITIES.

Variable	**1989**	**1991**	**1993**	**1995**
Day-care density	SGBO	SGBO	SGBO	SGBO
Demand factors				
Number of children per household	-	-	-	SN[1] (1999c)
Percentage of one-parent families	SN (1998)	SN[2] (1998)	SN[3] (1998)	SN[4] (1998)
Mean net annual income	SN[5] (1988)	SN[6] (1998)	SN[7] (1998)	SN (1998)
Educational attainment	-	-	SN (1999c)	SN (1999c)
Number of children	SN (1998)	SN (1998)	SN (1998)	SN (1998)
Population density	SN (1998)	SN (1998)	SN (1998)	SN (1998)
Composition of Town Council				
Percentage of left-wing councilors	SN (1987)	SN (1994a)	SN (1994a)	SN (1994a)
Percentage of female councilors	SN (1987)	SN (1994a)	SN (1994a)	SN (1994a)
Employment structure				
Percentage of non-commerical services	SN (1998)	SN (1998)	SN (1998)	SN (1998)

[1]: Constructed from: the number of children (SN, 1998) and the number of household (SN, 1999c).
[2]: Percentage of one-parent families of 1989. The 1989 percentage of one-parent families is used for 1991, because the 1992 percentage of one-parent families data refer to only 448 municipalities.
[3]: Percentage of one-parent families of 1992. The 1989 percentage of one-parent families is used for 1991, because the 1992 percentage of one-parent families data refer to only 448 municipalities.
[4]: Percentage of one-parent families of 1996. The 1996 percentage of one-parent families is used for 1993, because the 1992 percentage of one-parent families data refer to only 448 municipalities.
[5]: Income data of 1984.
[6]: Income data of 1990.
[7]: Income data of 1995.

Appendix B

Supplementary Tables to Chapter 6

TABLE B1. RESULTS OF PANEL REGRESSION ANALYSES TO EXPLAIN THE PERCENTAGE OF LEFT-WING AND FEMALE COUNCILORS, 1989-1995 (*N*=2266, 632 MUNICIPALITIES).

EXPLANATORY VARIABLES	LEFT-WING (t-values)		FEMALE (t-values)	
Year				
1989	*reference*		*reference*	
1991	-8.12 *	(-2.27)	1.42	(0.37)
1993	-15.29 **	(-3.53)	2.90	(0.60)
1995	-15.25 **	(-3.31)	2.83	(0.57)
Demand by parents				
*Parental income (*10^{-3})*				
1989	-0.72 *	(-1.97)	1.53 **	(5.79)
1991	-0.18	(-0.50)	1.51 **	(5.68)
1993	0.29	(0.79)	1.55 **	(5.75)
1995	0.29	(0.77)	1.55 **	(5.71)
Number of single parents				
1989	3.62 **	(9.37)	0.60 *	(2.22)
1991	3.59 **	(9.17)	0.73 **	(2.71)
1993	3.36 **	(8.46)	0.54 *	(1.97)
1995	3.37 **	(8.44)	0.54 *	(1.98)
Average distance to day-care center				
1989-1995	-2.65 **	(-3.75)	-1.04 *	(-2.35)
Informal supply				
1989-1995	0.06	(0.22)	-0.21	(-1.16)
Constant	13.26 *	(2.28)	-11.19 **	(-2.67)
Wald χ^2 (13 d.f.)	249.74 **		187.89 **	

[a] Unstandardized coefficients; ** = significant at 1% level; * = significant at 5% level.
Source: supply data from SGBO; demand data from Statistics Netherlands.

TABLE B2. RESULTS OF OLS REGRESSION ANALYSES TO EXPLAIN THE PERCENTAGE OF LEFT-WING AND FEMALE COUNCILORS, 1995 (*N*=524 MUNICIPALITIES).

EXPLANATORY VARIABLES	LEFT-WING (t-values)		FEMALE (t-values)	
Demand by parents				
Number of children up to four years per family	31.83 *	(2.00)	23.18 *	(1.97)
Parental income (*10^{-3})	1.27 **	(3.03)	1.95 **	(6.32)
Number of single parents	4.23 **	(10.67)	1.25 **	(4.27)
Average distance to day-care center	-1.11	(-1.26)	-0.27	(-0.41)
Norms	-0.26 **	(-3.26)	-0.12 †	(-1.93)
Informal supply	1.13 **	(3.32)	-0.25	(-1.01)
Constant	-33.93 **	(-3.14)	-30.83 **	(-3.85)
Adj. R^2	0.291 **		0.133 **	

[a)] Unstandardized coefficients; ** = significant at 1% level; * = significant at 5% level; † = significant at 10% level.
Source: supply data from SGBO; demand data from Statistics Netherlands.

Samenvatting (summary in Dutch)

Onderzoeksvragen

Het gebruik van kinderopvang voor kinderen jonger dan vier jaar is in Nederland de afgelopen jaren aanzienlijk gestegen. Vooral het gebruik van kinderdagverblijven is toegenomen. Hiervoor zijn verschillende verklaringen, zoals de toegenomen arbeidsmarktparticipatie van vrouwen, veranderde attitudes ten aanzien van het gebruik van kinderopvang, een afname van het aanbod van informele opvang en de toegenomen beschikbaarheid van geïnstitutionaliseerde opvang. De toename van het aanbod was eind jaren tachtig onvoldoende om te voldoen aan de vraag naar opvang. Daarom heeft de overheid zich in de eerste helft van de jaren negentig via de Stimuleringsmaatregelen Kinderopvang ingezet om het aanbod van geïnstitutionaliseerde kinderopvang te doen toenemen. De Stimuleringsmaatregelen zijn opgezet als een publiek-private samenwerking. Overheid en werkgevers werken samen aan het vergroten van het aanbod. Werkgevers kregen door de introductie van bedrijfsgefinancierde kindplaatsen een belangrijke rol in de Stimuleringsmaatregelen. Volgens de plannen van de overheid zouden werkgevers het grootste gedeelte van de groei van het aanbod van kinderopvang voor hun rekening moeten nemen. De medewerking van werkgevers lijkt voor de hand te liggen, omdat ook zij profiteren van het vergrote arbeidsaanbod van vrouwen. Een aantal kanttekeningen moet worden geplaatst bij de bedrijfsgefinancierde kinderopvang. Het kan, bijvoorbeeld, worden aangenomen dat in sectoren waar werkgevers in mindere mate afhankelijk zijn van het aanbod van vrouwelijk personeel minder kinderopvang voor werknemers zal worden gefinancierd. Daarnaast kan het zo zijn dat werkgevers alleen kinderopvang aanbieden aan hun hoger opgeleide personeel. Naast de grotere rol van bedrijven is de decentralisatie van beleid een belangrijk aspect van de Stimuleringsmaatregelen. Als gevolg hiervan is kinderopvang in toenemende mate de verantwoordelijkheid van gemeenten geworden, wat gevolgen heeft voor de verschillen in beschikbaarheid van opvang tussen gemeenten. Al met al lijken de Stimuleringsmaatregelen behoorlijk succesvol te zijn geweest. Het aantal kindplaatsen is tussen 1989 en 1995 toegenomen van 20.100 tot 65.600 plaatsen, d.w.z. een toename van 226 procent. De toename van de bedrijfsgefinancierde opvang is verantwoordelijk voor 90 procent van de groei. De ontwikkeling in het aanbod van kinderopvang en het beleid van de overheid ten aanzien van kinderopvang in de periode 1989-1995 hebben tot de volgende vragen geleid:

1a. Hoe kan het geaggregeerde aanbod van kinderopvang in gemeenten worden verklaard vanuit vraag ernaar door ouders, gemeenteraden, en werkgevers?

1b. Hoe verandert de relatieve invloed van de vraag naar kinderopvang door ouders, gemeenteraden, en werkgevers op het geaggregeerd kinderopvangaanbod in gemeenten in de tijd?

De Stimuleringsmaatregelen Kinderopvang hielden op na 1995. Het wegvallen van de Stimuleringsmaatregelen impliceerde een verdere overgang van de kinderdagverblijven van de welzijnssector naar de marktsector. Deze transitie is in overeenstemming met het overheidsbeleid in recente jaren, die gekarakteriseerd wordt door een kleiner wordende collectieve sector, ten gunste van de markt. Besluitvormers van kinderdagverblijven zijn nu maatschappelijk ondernemers geworden. Marktwerking in de sector kinderopvang zou moeten zorgen voor meer efficiëntie, maar kan ook leiden tot een lagere kwaliteit[85] en een verminderde toegankelijkheid van de opvang. Dit leidt tot de tweede onderzoeksvraag:

2. Hoe beïnvloedt de transitie van welzijnsector naar markt verschillen in efficiëntie, kwaliteit en toegankelijkheid van opvang tussen kinderdagverblijven?

De markt voor kinderopvang

De markt voor kinderopvang is een bijzondere markt. Kinderopvangdiensten zijn multi-dimensioneel en worden aangeboden door een heterogene groep aanbieders. Deze en andere kenmerken van de markt voor kinderopvang zorgen voor marktimperfecties. Marktimperfecties kunnen een reden voor overheden zijn om in te grijpen in een markt. Echter, ingrijpen door de overheid heeft ook nadelen. Het kan leiden tot overheidsimperfecties.

Er zijn drie belangrijke oorzaken van marktimperfecties in de markt voor kinderopvang: monopolistische concurrentie, informatieasymmetrie en externe effecten. Monopolistische concurrentie zorgt ervoor dat de prijzen hoger zijn en dat het aanbod kleiner is dan in een situatie van pure concurrentie. Informatieasymmetrie tussen consumenten en aanbieders brengt een tendens met zich mee naar moreel gevaar en averechtse selectie. Moreel gevaar houdt in dat de aanbieder, door een gebrek aan controle op de kwaliteit, geen andere prikkel dan een morele heeft om de beloofde kwaliteit te leveren. Averechtse selectie betekent dat de consument niet meer wil betalen dan op grond van de gemiddelde kwaliteit verwacht mag worden. Beide tenderen naar een beperking van het aanbod en een verlaging van de kwaliteit. Een belangrijk positief extern effect van de kinderopvangmarkt is de toename van de arbeidsmarktparticipatie van vrouwen. Doordat de individuele besluitvormers zich niet noodzakelijkerwijs door een dergelijke macrodoelstelling laten leiden, komt naar verwachting een beperktere hoeveelheid kinderopvang tot stand dan gewenst is vanuit oogpunt van de maatschappij als geheel. Naast deze marktimperfecties kan ook de rechtvaardigheid een reden voor overheden zijn om in te grijpen in de markt voor kinderopvang. Het betreft de toegankelijkheid en een rechtvaardige verdeling van plaatsen onder consumenten. Toegangsbelemmeringen kunnen worden gevonden in de beschikbaarheid van plaatsen en de prijzen van kinderopvang. Twee bronnen van overheidsimperfecties kunnen worden onderscheiden: het ontbreken van een koppeling tussen kosten en opbrengsten en informatieasymmetrie. De afwezigheid van een koppeling tussen kosten en opbrengsten is een belangrijke bron van

[85] Onder kwaliteit van opvang verstaan we hier de structurele kwaliteit. Hieronder vallen onder meer de leidster/kind-ratio, de groepsgrootte en de opleiding van leidsters.

overheidsimperfectie. In zo'n situatie worden meer middelen dan nodig gebruikt om een bepaalde productie voort te brengen. Informatieasymmetrieën kunnen deze inefficiënties zelfs versterken.

Er zijn drie manieren waarop de overheid in een markt kan ingrijpen: regulering, subsidiering (of het heffen van belastingen) en zelf voorzien in het goed of de dienst. Regulering zou er onder meer voor moeten zorgen dat aanbieders van lage kwaliteit de markt niet kunnen betreden. Subsidies kunnen worden gegeven aan consumenten en aanbieders. Subsidies aan consumenten zorgen met name voor een verbeterde toegankelijkheid van de opvang, terwijl subsidies aan aanbieders voornamelijk een instrument zijn om het aantal plaatsen te vergroten en de kwaliteit te verhogen. Het zelf leveren door de overheid kan worden overwogen wanneer ouders niet goed reageren op de prijs bij hun vraag naar opleiding of opvoeding van hun kinderen. Overheidsimperfecties kunnen worden aangepakt door decentralisatie en privatisering. Het uitbesteden van diensten en publiek-private samenwerkingsverbanden zijn voorbeelden van decentralisatie.

Het verklaren van het aanbod van kinderopvang

Twee theoretische modellen zijn voor dit proefschrift ontwikkeld om het aanbod van kinderopvang te verklaren. Het eerste model probeert het aanbod van kinderopvang in gemeenten te verklaren (onderzoeksvraag 1). Het tweede model probeert verschillen in aanbod tussen kinderdagverblijven te verklaren. Efficiëntie, kwaliteit, en toegankelijkheid staan centraal (onderzoeksvraag 2).

Het aanbod van kinderopvang in gemeenten wordt verondersteld vraaggeïnduceerd te zijn. Drie partijen die om kinderopvang vragen worden in onderzoeksvraag 1a onderscheiden: ouders, gemeenten (gemeenteraden) en bedrijven. Van de vraag naar kinderopvang door ouders verwachten we dat deze afhankelijk is van inkomens- en tijdsbudgetrestricties, normen en de beschikbaarheid van alternatieve opvangmogelijkheden. Verwacht kan worden dat de vraag naar kinderopvang door gemeenten wordt beïnvloed door de samenstelling van de gemeenteraad. Keuzes over de besteding van het gemeentelijke budget worden genomen door de gemeenteraad. Voor wat betreft de vraag naar kinderopvang door werkgevers wordt verwacht dat bedrijven waar relatief veel (hoog opgeleide) vrouwen werken meer kinderopvang aan hun personeel aanbieden. Het kan worden aangenomen dat de toegenomen betrokkenheid van werkgevers, als gevolg van de publiek-private samenwerking, en de decentralisatie van beleid hebben geleid tot veranderingen in het effect dat de vraag van ouders, gemeenten en bedrijven heeft op het aanbod van kinderopvang in gemeenten (onderzoeksvraag 1b). De vraag naar kinderopvang door ouders wordt waarschijnlijk een belangrijker verklarende factor voor het aanbod van kinderopvang in gemeenten. Werkgevers schuiven namelijk een deel van de kosten door naar ouders, door kinderopvang voornamelijk aan te bieden aan ouders met hoge inkomens. Verwacht wordt ook dat door de decentralisatie de samenstelling van de gemeenteraad aanvankelijk belangrijker wordt, maar dat dit geleidelijk aan minder zal worden door een toenemend belang van de vraag door ouders en bedrijven. De groei van de bedrijfsgefinancierde kinderopvang leidt tot de verwachting dat de vraag naar kinderopvang

door bedrijven over de gehele periode een belangrijker verklarende factor voor het aanbod van kinderopvang wordt.

Vervolgens proberen we verschillen in het aanbod tussen kinderdagverblijven te verklaren. De theorie die hier is ontwikkeld, tracht in het bijzonder verschillen in efficiëntie, kwaliteit en toegankelijkheid te verklaren. Dit stelt ons in staat om onderzoeksvraag 2 te beantwoorden: welk effect heeft de overgang van de welzijnssector naar de markt (d.w.z. meer marktwerking) op het aanbod van kinderopvang. Het wegvallen van de stimuleringsmaatregelen gaf kinderdagverblijven een prikkel om hun kosten te verlagen en/of hun inkomsten te vergroten. De kosten per plaats kunnen worden verlaagd door efficiënter te produceren, door de kwaliteit te verlagen of door een combinatie van beide. Meer opbrengsten per plaats kunnen worden gegenereerd door meer bedrijfsgefinancierde en/of private plaatsen te creëren of door het verhogen van de prijzen in het algemeen. Relatief meer bedrijfsgefinancierde en/of private plaatsen levert meer geld per plaats op omdat de gemiddelde prijs hiervan hoger is dan van gesubsidieerde plaatsen. Om te verklaren welke combinatie van de opties zal worden gekozen (dat wil zeggen wat het gedrag van de besluitvormer zal zijn) wordt Lindenberg's sociale-productiefunctiebenadering gebruikt. Hiermee wordt ook getracht verschillen in het aanbod tussen kinderdagverblijven te verklaren. De sociale-productiefunctiebenadering stelt het individu centraal, in dit geval de besluitvormer van het kinderdagverblijf. Het gedrag van de besluitvormer wordt verklaard uit de confrontatie van de (ultieme) doelen van de besluitvormer met de restricties waarmee zij zich geconfronteerd ziet. Lindenberg onderscheidt twee ultieme doelen: fysiek en sociaal welbevinden. Beide doelen kunnen worden bereikt via onderliggende, instrumentele doelen. Aangezien we aannemen dat de ultieme doelen stabiel en universeel zijn, worden de verschillen in gedrag verklaard vanuit de restricties. De restricties van de besluitvormer van het kinderdagverblijf worden gevonden op drie niveaus: het niveau van de besluitvormer, het niveau van het kinderdagverblijf en het niveau van de omgeving. Uit de theorie worden hypothesen afgeleid voor de effecten van de onderscheiden factoren op elk van de drie niveaus.

Data

Twee databestanden worden gebruikt om de hypothesen te toetsten. In de eerste plaats worden data van het SGBO (het onderzoeksbureau van de VNG) en van het CBS gebruikt om de hypothesen met betrekking tot verschillen in het aanbod van kinderopvang tussen gemeenten te toetsen. Het databestand van het SGBO bevat gegevens over het aanbod van kinderopvang (aantal kinderopvangplaatsen) in Nederlandse gemeenten tussen 1989 en 1995. Toegevoegd aan deze aanbodgegevens zijn gegevens van het CBS over de vraag. Deze vraaggegevens betreffen vraag naar kinderopvang door ouders, gemeenten en werkgevers. Om de hypothesen met betrekking tot verschillen tussen kinderdagverblijven te kunnen toetsen zijn nieuwe data verzameld. Hiervoor is een vragenlijst gestuurd naar alle Nederlandse kinderdagverblijven die waren vermeld in het telefoonboek (N=1943). Na vijf herinneringen lag het responspercentage op 30 (N=469). Analyse van de selectiviteit van de respons liet zien dat de kinderdagverblijven in ons databestand een redelijke

afspiegeling vormen van de populatie van kinderdagverblijven, afgezien van een oververtegenwoordiging van kinderdagverblijven die onderdeel zijn van een koepelorganisatie met meerdere activiteiten en een ondervertegenwoordiging van kinderdagverblijven die kinderopvang als enige activiteit hebben. Kinderopvangaanbod is in het onderzoek op gemeenteniveau geoperationaliseerd als kindplaatsdichtheid, dat wil zeggen het aantal plaatsen in kinderdagverblijven per 1000 kinderen onder de leeftijd van vier jaar in een gemeente. Bij de analyses voor verschillen in het aanbod tussen kinderdagverblijven worden vijf dimensies van het aanbod onderscheiden: efficiëntie, kwaliteit, het percentage bedrijfs- en/of private plaatsen en prijzen. Efficiëntie wordt in de eerste plaats gemeten door een variabele gedefinieerd als prijs gedeeld door kwaliteit (de prijs-kwaliteitratio). Een tweede operationalisatie van efficiëntie is de bezettingsgraad. Kwaliteit wordt gemeten door drie variabelen: de leidster/kind-ratio, het gemiddelde opleidingsniveau van de leidsters en de score op de kwaliteitsschaal. Het percentage bedrijfs- en private plaatsen wordt geoperationaliseerd als het aantal van deze plaatsen gedeeld door het totaal aantal plaatsen. De prijs wordt gemeten door de verkoopprijs.

Resultaten

Aanbod van kinderopvang in gemeenten

De hoeveelheid kinderopvang die in een gemeente wordt aangeboden wordt inderdaad beïnvloed door de vraag naar kinderopvang door ouders, gemeenten en werkgevers (onderzoeksvraag 1). Panelanalyses en dwarsdoorsnede-analyses laten zien dat de bijbehorende hypothesen grotendeels bevestigd worden. Uit de analyses blijkt bovendien dat de vraag naar kinderopvang door ouders een sterkere determinant van het aanbod is dan vraag naar kinderopvang door gemeenten of werkgevers. De resultaten van de analyses geven tevens aan dat de vraag naar kinderopvang door ouders in de beschouwde periode een steeds belangrijker determinant van het aanbod is geworden. In overeenstemming met de verwachting vinden we dat het effect van de vraag naar kinderopvang door gemeenten aanvankelijk groter wordt (1989-1993). We vinden echter niet de voorspelde afname van dit effect die hierop zou moeten volgen. De introductie van bedrijfsgefinancierde opvang heeft er wel voor gezorgd dat het aanbod van kinderopvang in gemeenten in toenemende mate wordt bepaald door de vraag naar kinderopvang door werkgevers.

Verschillen in het aanbod tussen kinderdagverblijven

Verschillen in efficiëntie, kwaliteit en toegankelijkheid van de opvang tussen kinderdagverblijven zijn geanalyseerd met behulp van regressieanalyses. De toegankelijkheid van de opvang kan worden afgelezen uit het percentage bedrijfs- en private plaatsen en de prijs van de opvang. Naarmate er relatief meer bedrijfs- en private plaatsen zijn en naarmate de prijs van de opvang hoger is, kan de opvang minder toegankelijk worden genoemd. In de analyses wordt door middel van robuuste schatters van variantie gecontroleerd voor de clustering van kinderdagverblijven in gemeenten. Zoals hiervoor reeds gezegd, onderscheiden we drie niveaus waarop we factoren aantreffen die een

effect kunnen hebben op het aanbod van kinderopvang: het niveau van de besluitvormer, het niveau van het kinderdagverblijf en het niveau van de omgeving.

Op het niveau van de besluitvormer vinden we drie factoren: normen, beslisruimte en de hoeveelheid menselijk kapitaal die een besluitvormer heeft. De resultaten van de analyses laten zien dat de kwaliteit van de opvang, afgemeten aan de leidster/kind-ratio, inderdaad hoger is in kinderdagverblijven waar de besluitvormer wordt geconfronteerd met sterkere normen ten aanzien van kwaliteit. In tegenstelling tot onze verwachting vinden we dat er relatief minder bedrijfsplaatsen zijn in kinderdagverblijven met sterke normen ten aanzien van kwaliteit. Schijnbaar proberen deze kinderdagverblijven de extra kosten die kinderopvang van hogere kwaliteit met zich brengt niet te verdienen door meer bedrijfsplaatsen te creëren. Normen ten aanzien van rechtvaardigheid zien we terugvertaald in een lagere prijs, wat duidt op meer toegankelijkheid van de opvang. Het percentage bedrijfs- of private plaatsen is echter niet lager in deze kinderdagverblijven. In kinderdagverblijven waar de besluitvormer meer beslisruimte heeft, is het percentage private plaatsen lager en de prijs hoger. De hoeveelheid menselijk kapitaal die een besluitvormer heeft, is ook van belang voor de kwaliteit van opvang. Meer ervaren besluitvormers realiseren een hogere kwaliteit van opvang (hogere leidster/kind-ratio en een hoger gemiddeld opleidingsniveau van de leidsters).

Ook verschillende kenmerken van het kinderdagverblijf hebben een effect op het aanbod. Of een kinderdagverblijf for-profit of nonprofit is, heeft effect op efficiëntie, kwaliteit en toegankelijkheid. De resultaten van de analyses wijzen uit dat, conform de verwachting, for-profit kinderdagverblijven efficiënter zijn dan nonprofit kinderdagverblijven. Dit lijkt te worden afgeruild tegen kwaliteit: de leidster/kind-ratio is lager in for-profit kinderdagverblijven. Opvallend is dat for-profit kinderdagverblijven relatief minder bedrijfsplaatsen en relatief meer private opvangplaatsen hebben. Dit duidt er wellicht op dat for-profit kinderdagverblijven zich op een andere marktniche richten dan nonprofit kinderdagverblijven. De schaal waarop het kinderdagverblijf of de organisatie waartoe het kinderdagverblijf behoort, kan efficiëntievoordelen met zich brengen. Deze efficiëntievoordelen zouden vervolgens benut kunnen worden om een hogere kwaliteit en/of meer toegankelijkheid te bieden. Hiertoe hebben we gekeken of kinderdagverblijven die onderdeel zijn van een nationale keten, kinderdagverblijven die groter zijn en kinderdagverblijven die relatief meer uren per dag open zijn, efficiënter zijn, hogere kwaliteit bieden en meer toegankelijk zijn. Van efficiëntievoordelen lijkt evenwel geen sprake te zijn. Kinderdagverblijven die onderdeel zijn van een nationale keten zijn minder efficiënt dan kinderdagverblijven die niet onderdeel zijn van een dergelijke keten. Daarnaast is de kwaliteit van opvang (leidster/kind-ratio) in deze kinderdagverblijven lager en zijn ze minder toegankelijk (hogere prijs en relatief meer bedrijfsplaatsen). Ook grotere kinderdagverblijven (meer dan twintig plaatsen) zijn minder efficiënt dan de kleinere kinderdagverblijven. Blijkbaar zijn er geen schaalvoordelen. We vonden wel economies of scope: kinderdagverblijven die meerdere vormen van kinderopvang aanbieden (bijvoorbeeld gastouderopvang en 24-uursopvang) zijn efficiënter dan kinderdagverblijven die slechts één vorm van kinderopvang aanbieden. Dit wordt ook vertaald in een lagere prijs van opvang. Deze hogere efficiëntie gaat evenwel gepaard met een lagere kwaliteit van opvang (gemiddelde opleidingsniveau van de leidsters). Andere kenmerken, zoals of het kinderdagverblijf vanuit een welzijnsinstelling is opgezet en of het vanuit een bepaalde

pedagogische visie werkt, hebben mogelijk een effect op het aanbod. De analyses laten zien dat kinderdagverblijven die hun achtergrond in de welzijnssector hebben efficiënter zijn. In dergelijke kinderdagverblijven is waarschijnlijk meer ervaring in de bedrijfsvoering opgebouwd, waardoor ze efficiënter kunnen werken. Deze kinderdagverblijven hebben verder relatief minder bedrijfs- en private plaatsen. Dit houdt dus in dat ze relatief meer gesubsidieerde plaatsen hebben en dus meer toegankelijk zijn. Het hebben van een pedagogische visie vertaalt zich in een hogere kwaliteit van opvang (gemiddeld hoger opgeleide leidsters).

Van de factoren op het niveau van de omgeving beïnvloeden weinig het aanbod van kinderopvang. Onderscheiden worden de effecten van competitie, vraag naar kinderopvang door ouders, gemeenten en bedrijven. Kinderdagverblijven die te maken hebben met competitie van informele aanbieders van opvang hebben relatief minder bedrijfsplaatsen. In gemeenten waar de ouders gemiddeld koopkrachtiger zijn (hogere inkomens), zijn kinderdagverblijven efficiënter. Een verklaring hiervoor kan zijn dat deze kinderdagverblijven een meer continue toestroom van koopkrachtige klanten hebben, wat de continuïteit van de bedrijfsvoering en daarmee de efficiëntie bevordert. Het effect van de vraag naar kinderopvang door gemeenten op het aanbod wordt nagegaan door te kijken naar het effect van het percentage linkse en vrouwelijke raadsleden op het aanbod. We vinden dat er relatief meer bedrijfsplaatsen zijn in kinderdagverblijven die gevestigd zijn in een gemeente met relatief veel vrouwelijke raadsleden. Dit is mogelijk een gevolg van de stimuleringsmaatregel. Om veel opvangplaatsen te creëren (waarvan we hebben aangenomen dat vrouwelijke raadsleden ervoor zijn) moesten ook veel bedrijfsplaatsen worden gecreëerd. Per saldo kan dit resulteren in een hogere percentage bedrijfsplaatsen. Als laatste factor onderscheiden we de vraag naar kinderopvang door werkgevers. Dit wordt gemeten via het percentage overheids- en onderwijsinstellingen. Daar waar meer vraag naar kinderopvang door werkgevers is, verwachten we relatief meer bedrijfsplaatsen. Dit blijkt niet helemaal op te gaan. In gemeenten waar relatief veel onderwijsinstellingen zijn, hebben kinderdagverblijven inderdaad relatief meer bedrijfsplaatsen (en relatief minder private plaatsen). Een vergelijkbaar effect vinden we niet voor overheidsinstellingen. Wel vinden we dat hoe hoger het percentage overheidsinstellingen in een gemeente is, hoe hoger de efficiëntie in termen van de prijs-kwaliteitratio is, maar hoe lager in termen van de bezettingsgraad. Dit biedt dus geen uitsluitsel over het effect dat vraag naar kinderopvang door bedrijven heeft op efficiëntie van kinderdagverblijven. De prijs van opvang is wel lager, naarmate er relatief meer overheidsinstellingen zijn in een gemeente.

Een antwoord op de tweede onderzoeksvraag (hoe beïnvloedt de overgang van de welzijnssector naar de markt de efficiëntie, kwaliteit en toegankelijkheid van opvang) vinden we door te kijken naar het effect van het al dan niet for-profit zijn van een kinderdagverblijf en naar het effect van competitie op het aanbod van kinderopvang. De analyses wijzen uit dat for-profit kinderdagverblijven efficiënter zijn in termen van de bezettingsgraad, dat ze lagere leidster/kindratio's hebben, en dat ze minder toegankelijk zijn. For-profit kinderdagverblijven hebben aan de ene kant relatief meer private plaatsen (minder toegankelijk), maar aan de andere kant relatief minder bedrijfsplaatsen (minder toegankelijk). Per saldo hebben ze meer private plaatsen, wat ze minder toegankelijk maakt dan nonprofit kinderdagverblijven. Of het kinderdagverblijf for-profit of

nonprofit is, heeft geen effect op efficiëntie in termen van de prijs-kwaliteitratio noch resulteert het in lagere prijzen. Competitie door formele aanbieders heeft helemaal geen effect op het aanbod van kinderopvang. Competitie door informele aanbieders resulteert slechts in een lager percentage bedrijfsplaatsen. Dus valt te verwachten dat de verdere overgang van de sector kinderopvang naar de markt (d.w.z. meer marktwerking) leidt tot meer efficiëntie (een betere bezettingsgraad), een lagere kwaliteit (leidster/kindratio en gemiddeld opleidingsniveau van leidsters), relatief minder bedrijfsplaatsen en relatief meer private plaatsen.

Conclusies

Eerdere onderzoeken naar het aanbod van kinderopvang in gemeenten waren beperkt tot een statische analyse van het effect van de vraag naar kinderopvang door ouders en gemeenten op het aanbod. Dit onderzoek voegt de vraag naar kinderopvang door werkgevers toe en geeft een dynamische analyse van het effect van vraag naar kinderopvang op het aanbod. De resultaten van de analyses laten zien dat het toevoegen van de vraag naar kinderopvang door werkgevers als verklarende factor zinvol is: het aanbod van kinderopvang in gemeenten wordt inderdaad beïnvloed door de vraag naar kinderopvang door werkgevers. De dynamische analyse laat daarnaast zien dat het aanbod van kinderopvang in toenemende mate wordt bepaald door de vraag naar kinderopvang door ouders en werkgevers. Met name de sterke toename van het belang van het inkomen van ouders als verklarende factor voor het aanbod valt op. Dit suggereert dat kinderopvang steeds minder toegankelijk is geworden voor ouders met lagere inkomens. Deze bevinding stemt overeen met hetgeen Maassen van den Brink en Groot (1996) vonden. Dit heeft mogelijk een tweedeling in de kinderopvang als gevolg: een private sector voor kinderen van ouders met hoge inkomens en een gesubsidieerde sector voor kinderen van ouders met lage inkomens. De overheid zou zich kunnen afvragen of een verdere groei van de bedrijfsgefinancierde kinderopvang gewenst is. Wegen de voordelen (voor relatief minder geld een aanzienlijke vergroting van het aanbod, ook voor kinderen van ouders met lagere inkomens) op tegen de nadelen (verhoudingsgewijs minder toegankelijk voor kinderen van ouders met lagere inkomens)?

Het onderzoek naar verschillen in het aanbod tussen kinderdagverblijven en het effect van marktwerking op het aanbod verschilt van andere onderzoeken doordat er nadrukkelijk rekening wordt gehouden met het multi-dimensionele karakter van kinderopvang. Ook wordt er rekening gehouden met het effect dat normen ten aanzien van kwaliteit en rechtvaardigheid kunnen hebben op de onderscheiden dimensies van het aanbod van kinderopvang. De resultaten van de analyses laten zien dat normen inderdaad een rol spelen. Op de vraag of de overheid zich meer met het aanbod van kinderopvang zou moeten bezighouden of dat het meer marktwerking zou moeten propageren, kan een tweeledig antwoord worden gegeven. Als de overheid wil dat kinderdagverblijven efficiënter werken, dan pleit dat voor meer marktwerking. Echter, als de overheid het accent wil leggen op de kwaliteit en toegankelijkheid, dan pleit dat niet voor meer marktwerking. Daarnaast zijn er imperfecties in de kinderopvangmarkt die er voor zorgen dat, als de kinderopvang overgelaten wordt aan de markt, er minder kinderopvang wordt aangeboden dan

wenselijk is vanuit maatschappelijk oogpunt en er een neerwaartse druk op de kwaliteit is. Andere bezwaren tegen meer marktwerking in de kinderopvang zijn het gebrek aan competitie op de lokale markt en het gebrekkige inzicht in de kostenstructuur dat de veel kinderdagverblijven hebben. Bovendien veronderstelt marktwerking dat (goed geïnformeerde) ouders kunnen kiezen uit een ruim aanbod. Gegeven het huidige tekort aan kinderopvang hebben ouders in de praktijk weinig te kiezen. Daarnaast zijn er relatief minder plaatsen gecreëerd in de periode dat er marktwerking was (1995-1998) dan in de periode daarvoor (1989-1995).

In 1999 is de overheid nieuwe Stimuleringsmaatregelen Kinderopvang gestart. Doel daarvan is om het aanbod van kinderopvang in 2002 te verdubbelen tot 150.000 plaatsen. Over het beleid na 2002 wordt nog uitgebreid gediscussieerd. Het kabinet wil van kinderopvang een basisvoorziening maken, waar de Tweede Kamer wil stoppen met het subsidiëren van kinderdagverblijven (aanbodfinanciering) en in plaats daarvan ouders wil subsidiëren (vraagfinanciering). Dit zou (weer) moeten leiden tot meer marktwerking. Dit onderzoek laat zien dat dat vermoedelijk zal leiden tot meer efficiëntie, maar dat dat tegelijkertijd de kwaliteit en de toegankelijkheid onder druk zet.

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Curriculum Vitae

Rudi Turksema was born on December 16th, 1970 in Groningen, the Netherlands. In 1989, he completed his secondary education and started to study Sociology at the University of Groningen. During his study he worked as a student assistent at the Northern Center for Health Care Research (Faculty of Medical Sciences) and the Faculty of Management and Organization. In this period he also worked as a free-lance researcher for Advice and Research for Health Care and Care for the Elderly (ARGO) of the University of Groningen. His thesis addressed developments in demand for and supply of care for the elderly. He graduated in August 1995 with Methods of Social-Scientific Research and Health Care as major subjects. From September 1995 to October 1999 he was a PhD-student at the Interuniversity Center for Social Science Theory and Methodology (ICS), Utrecht University. The research reported in this book is a result of his work at the ICS. In 1997 he participated in the ICPSR Summer Program in Quantitative Methods at the University of Michigan. In 1998 he was a visiting scholar at the Carolina Population Center of the University of North Carolina. Currently he works as a researcher at the Netherlands Court of Audit.

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